SERVICE TROUBLESHOOTING MANUAL GUIDE

VEHICLE ELECTRICAL SYSTEM

Kässbohrer

Pisten Bully

EDGE (Mercedes OM926LA Powered)

Groomer & Park Bully from s/n 823-10670 (USA)
Trail EDGE from s/n 823-10731 (USA)

CD Part # 82.5.20220
Book Part # 82.5.20220B
Edition 12-Feb-10

Back to Main Menu

PLEASE READ CAREFULLY!

GENERAL INFORMATION

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

TESTING SAFETY

Most circuits are energized at a maximum of 24 volts. This is a relatively low voltage but safety is still an important consideration in troubleshooting.

Only skilled personnel familiar with electrical equipment should be permitted to do the work. There may be hazards present, not only from electrical energy but also from mechanical and fluid power equipment. It is important to know the condition of all sections of the machine before starting troubleshooting work.

CIRCUIT GROUND LOCATIONS

The ground network for the electrical system consists of the main frame, engine block, subframe of platform, and steel framework of cab. Because of the numerous ground points involved, it is not feasible to show the actual location on the vehicle where each ground wire terminates. In the following circuit diagrams, ground connections are shown with the conventional symbol

CIRCUITS AND SERIAL NUMBERS

Although the majority of the electrical circuits are common within the different serial number ranges of the PB EDGE, certain circuits are not. Circuits that are applicable to a specific serial number range have been identified as such. It is important to identify your vehicle serial number prior to use of this book in order to insure that the correct circuit is referenced.

TABLE OF CONTENTS

PAGE

Using This Manual 4
Component Location 6
Relay - Fuse Index..... 7
Ignition Switch Starting - Charging Circuit 8
Drive Control (Card to Cab) (Steering Wheel)..... 9
Drive Control (Card to Chassis) (Steering Wheel)..... 10
Drive Control (Stick Controls)..... 11
Trail 2-Speed Drive Motors 12
Third Pump Control (Steering Wheel)..... 13
Third Pump Control (Stick Drive Controls)..... 14
Front Implement Electrical System, (Ball Handle) 15
Front Implement Electrical System, (Park Bully Joystick) 16
Rear Implement Electrical System (Groomer) 17
Rear Implement Electrical System (Park Bully) 18
Tiller Depth Adjustment Circuit 19
Track Tension 20
Gauges, Senders and Hour Meter..... 21
Warning Lights and Buzzer 22
Radio and Driver's Seat..... 23
Seat Belt Tension Lock (stick controls) 24
Front Top Lights & Park Lights 25
Front Fog/Xenon Lights (optional) 26
Rear Top Lights & Hand Spotlight 27
Beacon Lights 28
Interior Light, Clock & Under Console Light 29
Directional Lights 30
Front Windshield Heating 31
Rear Window Heating 32
Side Window Heating & Mirror Heating 33
Cab Heater 34
Front Wipers and Horn 35
Rear Wipers 36
Engine Grid Heater 37
Engine Brake 38
Engine Fan (electric shift) 39
Engine Fuel Injection Wiring 40
Engine Block Heater 41
Complete Main Electrical PB EDGE 42
Circuit Testing Procedures 43
Resistor Color Coding 48
Wheel Diagram For Electrical Equations 49
Index 50

USING THIS MANUAL

The entire electrical system has been broken down into its individual circuits. A table of contents is provided at the start of the manual to aid the reader to quickly locate a particular circuit. A section has been included on techniques for testing basic circuit failures. Each individual circuit has been drawn in diagramatic form using electrical symbols. However, each symbol is identified by an illustration along with part name and part number. When possible, the actual component location is also illustrated.

Relays are identified by a K and a number. Example: K7. Fuses are identified by their number and switches are identified by an S and the number. Example: S22. A glossary of the fuses and relays has been included.

Each electrical component's terminal markings have been identified and each wire has been color coded. A color code chart has been placed on most circuits as a reference aid. Often times, a number will immediately follow the color code on a wire: Example: BL.75. The number .75 indicates the area size of the wire in millimeters.

The electrical circuitry of the PB EDGE has centralized points of connection. These connectors are identified by Roman numerals, and their location is noted on Page 6. Please note example below for an explanation of their use in the electrical drawings.

Electrical wire harness connection points are shown with a
ROMAN NUMERAL and NUMBER

EXAMPLE: III - 2

The ROMAN NUMERALS refer to specific
plastic connection blocks located in the vehicle.

BLOCKS -- I II III IV
are located under center console.

BLOCK ----- VIII
is located inside steering column.

The NUMBER adjacent to the
Roman Numeral refers to specific
embossed number located on
the block surface.

This manual is provided, not with the intent to circumvent, but rather to supplement the electrical system wiring schematics provided in your vehicle's service manual. It should also be used in conjunction with the PB EDGE Operator's Manual which describes the location and function of the individual switches and electrical components.

In conclusion, it is hoped that this manual will provide the following benefits:

1. To provide a learning aid to newcomers unfamiliar with the Pisten Bully EDGE electrical system and thus reduce familiarization time.

2. To provide a means for someone wishing to further develop their understanding of the electrical system.

3. To insure that proper wiring connections are made when components are replaced.

4. To provide a means to quickly locate components and their part numbers.

5. To enable the reader to quickly visualize how and which particular components are interconnected in a particular circuit.

6. To provide an aid in troubleshooting.

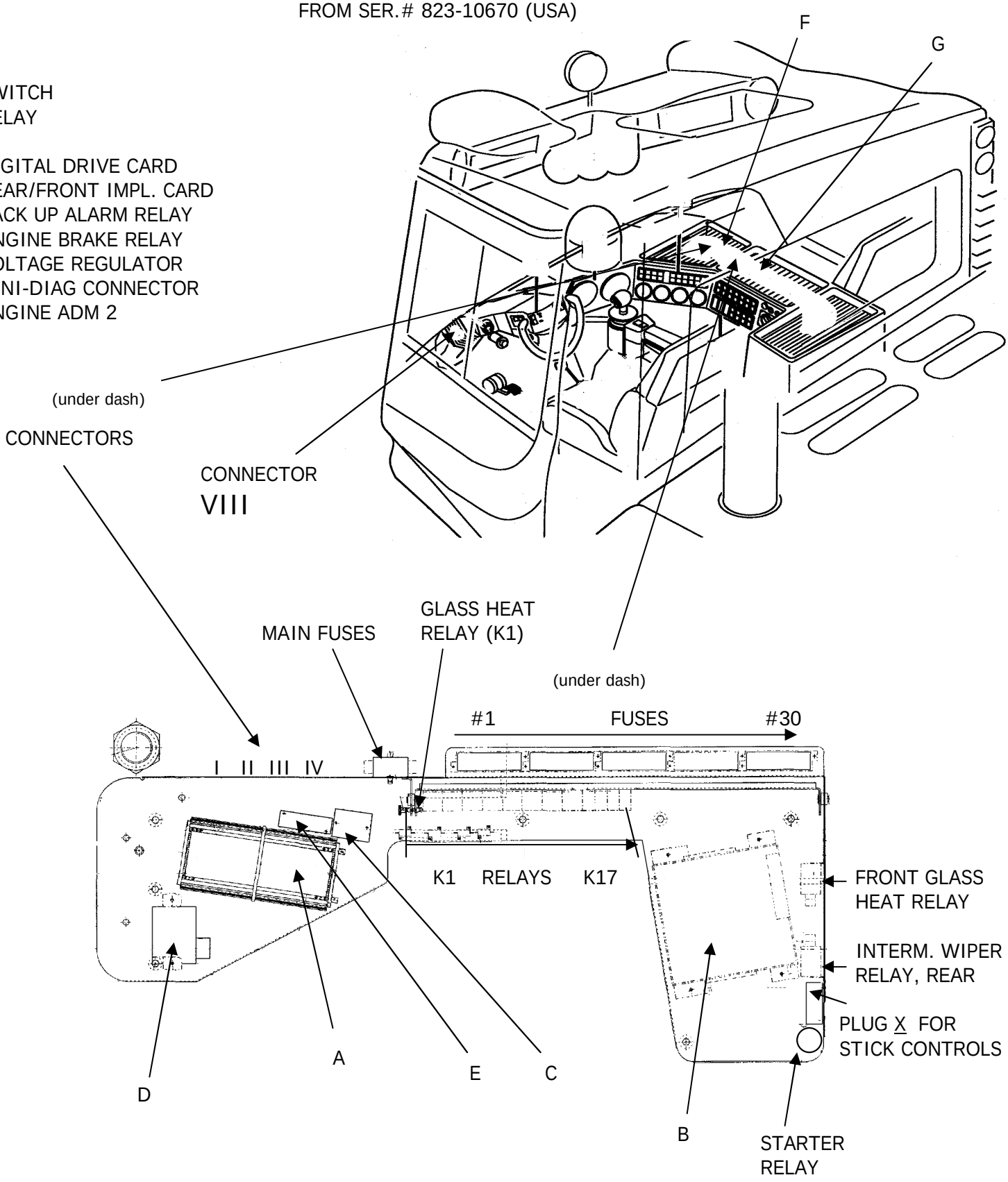
7. To increase communication effectiveness between parts and service personnel when dealing with the electrical system.

COMPONENT LOCATION

FROM SER.# 823-10670 (USA)

S SWITCH
K RELAY

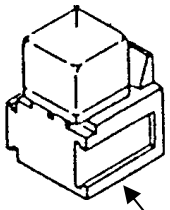
A DIGITAL DRIVE CARD
B REAR/FRONT IMPL. CARD
C BACK UP ALARM RELAY
D ENGINE BRAKE RELAY
E VOLTAGE REGULATOR
F MINI-DIAG CONNECTOR
G ENGINE ADM 2

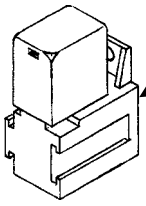


RELAY & FUSE INDEX

FROM SER.# 823-10670 (USA)

RELAYS

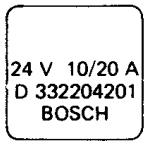


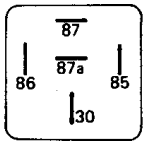


Base 7.375.182.000
Term .250" 0.023.706.001
Term .188" 0.023.706.032

Base 7.375.112.001
Term .250" 0.023.706.001

7.375.197.000





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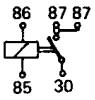

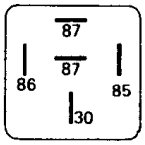

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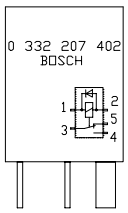
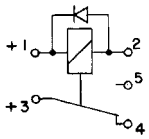
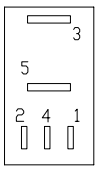
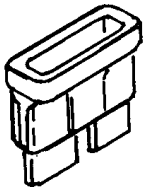






K1	Directional lights
K2	Horn
K3	Circuits ON "ONLY" with engine running
K4	Main lighting
K5	Headlights
K6	Rear lights
K7	Available
K8	Rear Window Heater
K9	Wiper interval front
K10-K13	Front blower (KFS) vehicles
K14	2 speed (trail 200)
K15	Park Bully rear power angle
K16	Park Bully blade elec. roll (B)
K17	Park Bully blade elec. roll (A)
K22	Wiper interval rear

FUSES

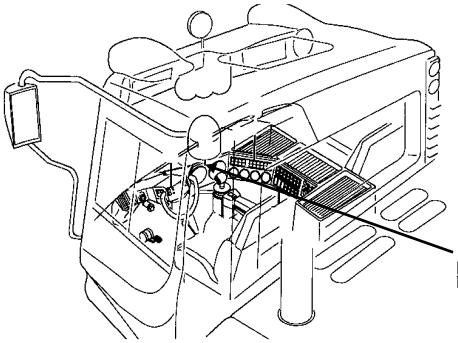


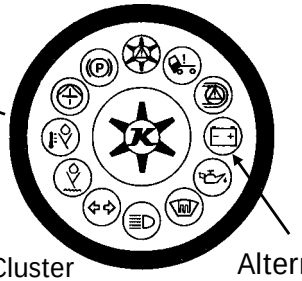
SIZE	PART NR.
10A	0.026.012.005
20A	0.026.012.007
30A	0.026.012.009

FUSE BLOCK BRIDGE 7.253.030.001

1. (10A) High beam lights, front
2. (10A) Low beam lights, front
3. (10A) Left front light, inside position
4. (10A) Right front light, inside position
5. (10A) Gauge lights, right taillight
6. (10A) Under console light, left taillight, stick control stop button light
7. (20A) Front xenon/fog lights
8. (20A) Rear top lights
9. (10A) Drive electronics, backup alarm, stick control
10. (10A) Tiller & drive bypass switch
11. (10A) Front plug, KFS power, seat belt lock
12. (10A) Rear wiper, comp. bar switches, Park Bully relays
13. (10A) Front wipers, 24v stereo
14. (10A) Tach, instr. cluster, gauges
15. (20A) Rear lights, hand spotlight
16. (20A) Aux. hydraulic elec. board
17. (10A) Available
18. (10A) Turn signals, horn, flash lights, grid heat
19. (20A) Heater blower
20. (10A) Engine electronic
21. (10A) Engine electronic
22. (10A) Engine electronic
23. (20A) 24 / 12V Converter
24. (10A) Engine electronic
25. (10A) Engine electronic, 24v accessory plug
26. (30A) Starter Relay
27. (20A) Relay K3, ON w/eng. running, side glass heat, mirror heat
28. (20A) Rear glass heat
29. (30A) Front window heater
30. (20A) Rotary beacons, interior light, clock

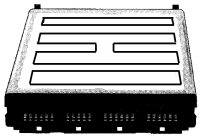
IGNITION SWITCH STARTING - CHARGING CIRCUIT



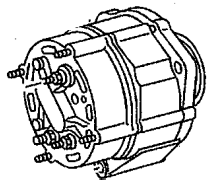


Instrument Cluster
8.749.118.000

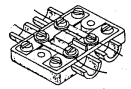
Alternator
Warning Light



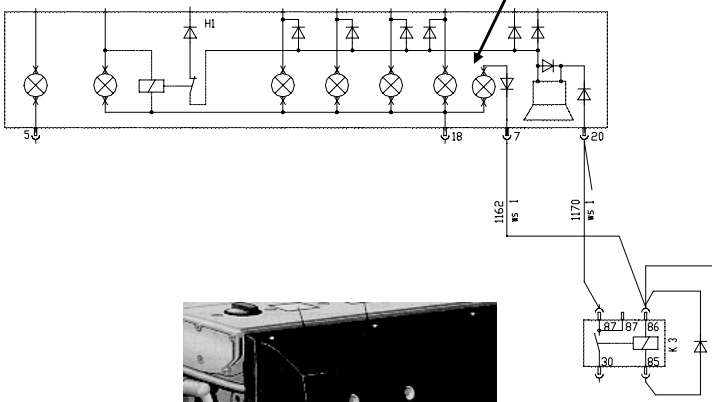
Engine Electronic (ADM 2)
(under dash) 825.4100.180.13

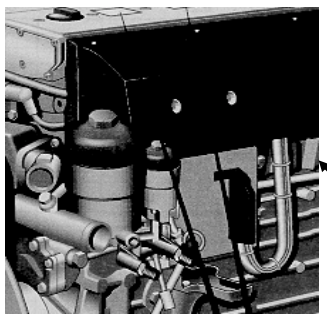


Alternator 7.421.356.000



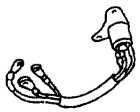
Main Fuse Box
7.253.016.000
80A Fuse
0.026.010.007



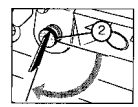


Engine Electronic (PLD)
(special order item)

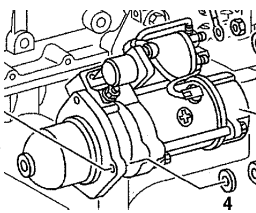
Ignition
Switch
7.345.(042-051).000



Starter Relay
(under dash)
08082



Battery Main Switch
7.341.110.000
Key only
7.341.110.002



Starter
8.312.088.014

Engine buttons
8.312.088.126

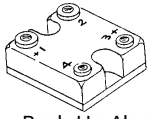
Color Code

BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

Batteries 7.471.054.102

DRIVE CONTROL, CARD TO CAB, STEERING WHEEL

from s/n 823-10670



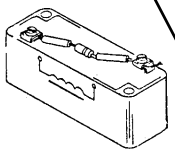
Relay, Back-Up Alarm
7.375.161.000

Brake sender input
for tiller safety shut-off

Alarm rocker switch
7.331.164.000
Symbol 7.331.137.109

Back up alarm
7.711.208.000

Plug pin positions
on drive card



Voltage Regulator
7.267.208.000

Only "KFS"
vehicles have
relays plugged in

Drive Card
8.749.175.000

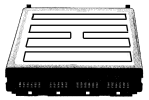
To left servo
Pin D

Fuse 2.5A
0.026.011.002

Cluster assembly
8.749.118.000

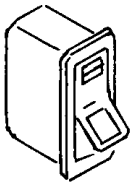
Connection for Engine Speed
Signal from ADM (Under Dash)

Throttle Position
Signal From ADM



ADM 2
825.4100.180.13

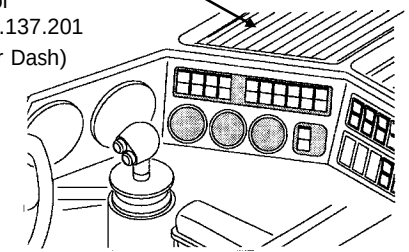
To third pump
control drawing



Connection Explanations:

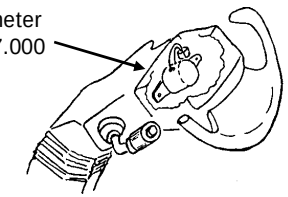
Connection Plug at Drive/Tiller Electronics equipped with Steering Wheel: FFE – L
Connection Plug at Drive/Tiller Electronics equipped with Steering Sticks: FFE – S
Connection Plug to install wiring from Steering Sticks: X
Connection Block III to convert from Sticks to Steering Wheel: III – L
Connection Block III to convert from Steering Wheel to Sticks: III – S
Connection Plug wire loom supply to Steering Column: VIII

Load Limit Bypass
Switch
7.331.179.000
Symbol
7.331.137.201
(Under Dash)

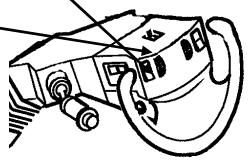


Forward/Reverse
Switch 7.331.166.002
Symbol
7.331.137.217

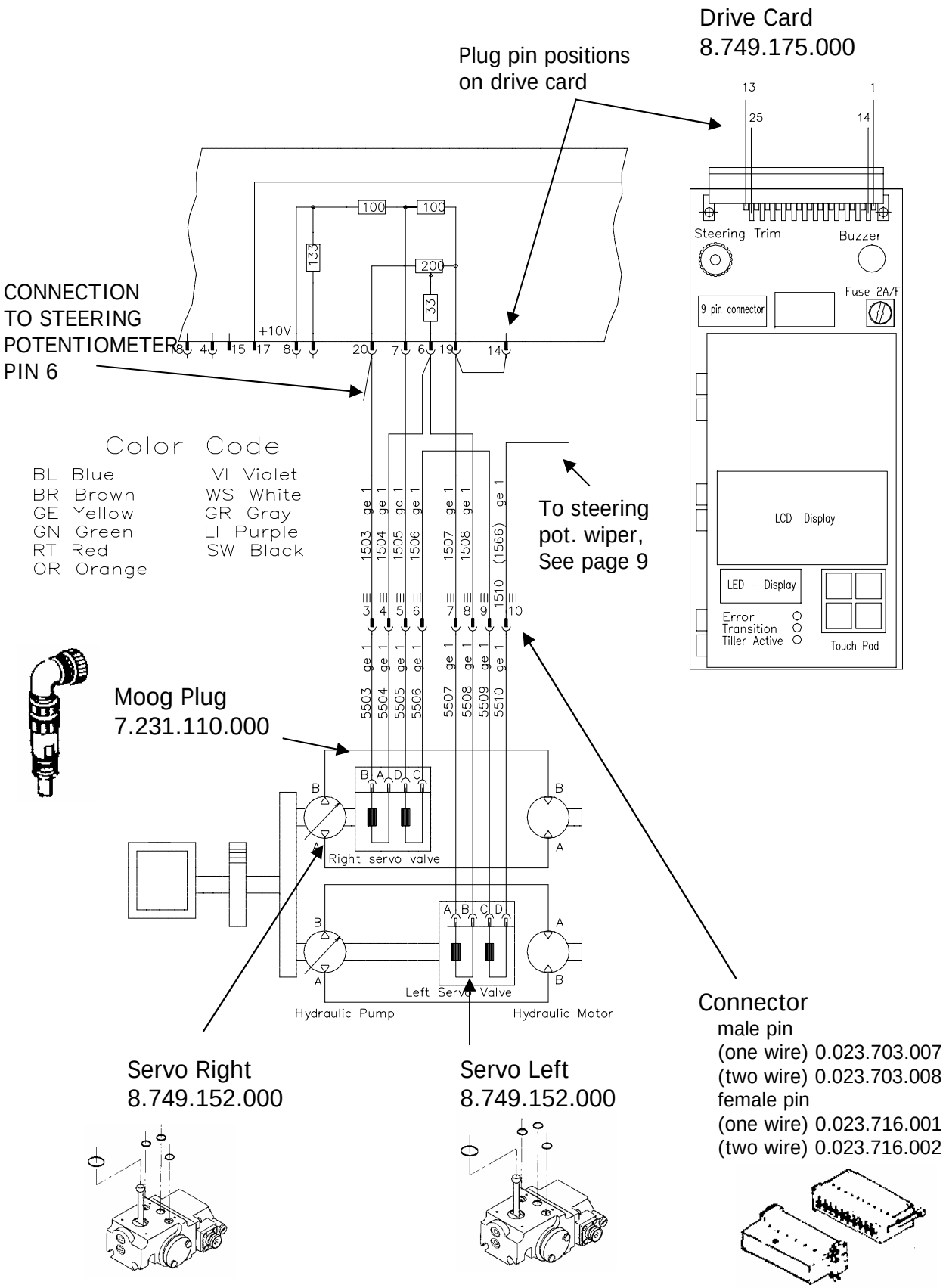
Steering
Potentiometer
8.749.087.000



Track Speed
Potentiometer
8.743.876.000



DRIVE CONTROL, STEERING WHEEL, CARD TO CHASSIS



DRIVE CONTROL, STICK CONTROLS (from # 823-10670)

Power supply with key on

Power supply with main light switch on

Brake sender input for tiller safety shut-off

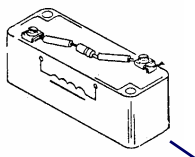
Alarm rocker switch 7.331.164.000 Symbol 7.331.137.109

Back up alarm 7.711.208.000

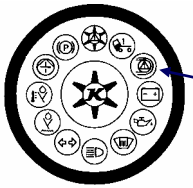
Plug pin positions on drive card

Fuse 2.5A 0.026.011.002

Drive Card 8.749.175.000



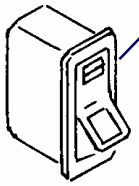
Voltage Regulator 7.267.208.000



Cluster assembly 8.749.118.000

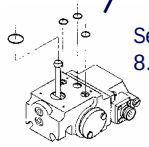
Throttle Position Signal From ADM 2

Connection for Engine Speed Signal from ADM 2



Armrest button switch 7.311.184.000

Servos left & right 8.749.152.000



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Connection Plug at Drive/Tiller Electronics equipped with Steering Sticks: FFE– S
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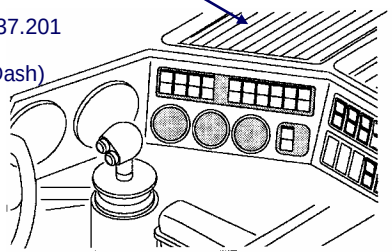
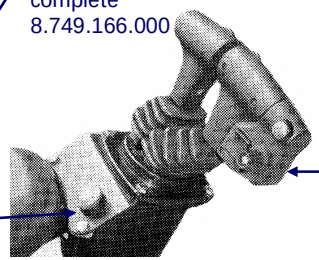
Connection Block III to convert from Sticks to Steering Wheel: III – L
Connection Block III to convert from Steering Wheel to Sticks: III – S
Connection Plug wire loom supply to Steering Column: VIII

Load Limit Bypass Switch 7.331.179.000 Symbol 7.331.137.201

(Under Dash)



Stick assembly complete 8.749.166.000



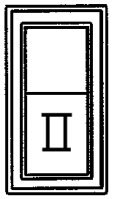
Track Speed Potentiometer (p/n 02013)

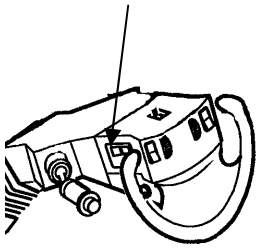
Emergency stop button actuator 7.311.183.000
Contact assembly 7.311.180.000

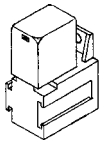
2-SPEED TRAIL DRIVE MOTORS

Connection @ forward / reverse switch

Rocker switch 7.331.154.000
Symbol 7.331.140.533



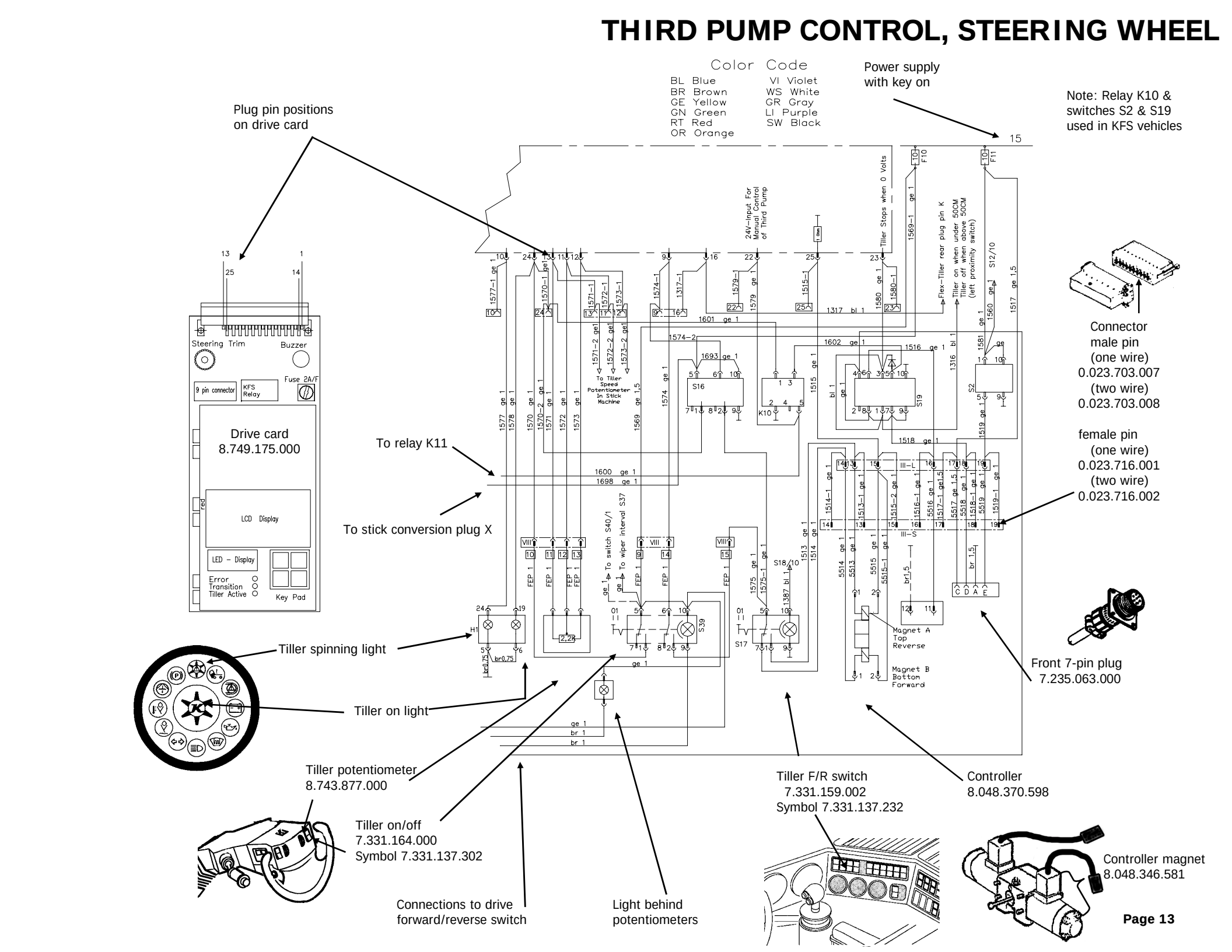




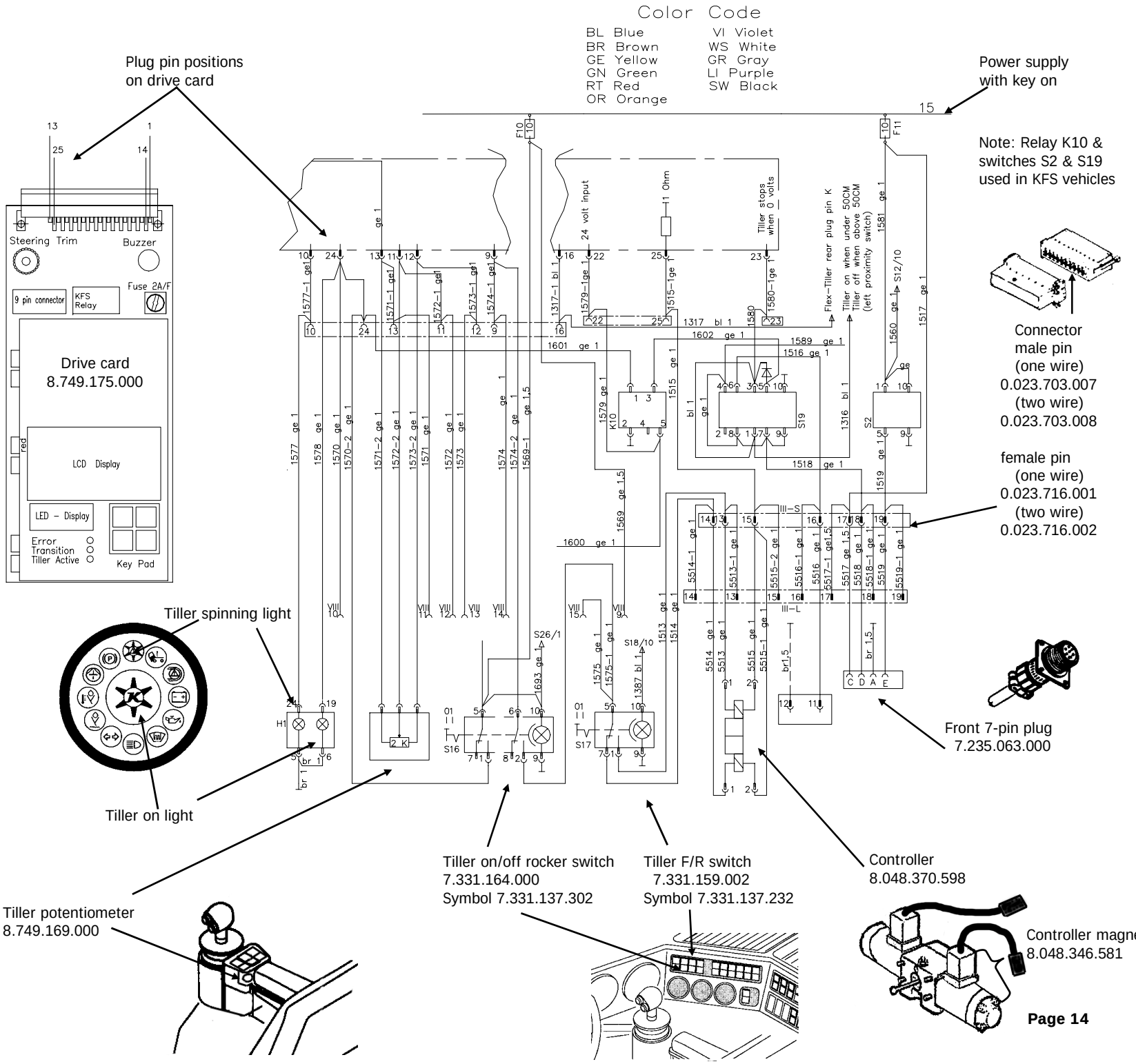
Relay 7.375.181.000

Connector pigtail
7.235.102.000

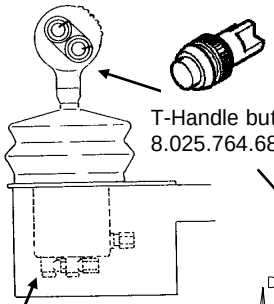
THIRD PUMP CONTROL, STEERING WHEEL



THIRD PUMP CONTROL, W/STICK DRIVE CONTROLS (from # 823-10670)



FRONT IMPLEMENT ELECTRICAL SYSTEM, BALL HANDLE

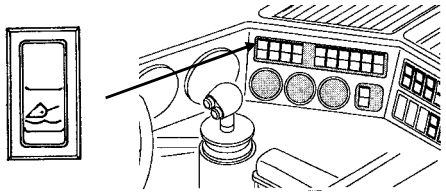


(alternate buttons)
7.331.227.000 toggle
8.026.108.142 red button

T-Handle buttons
8.025.764.682

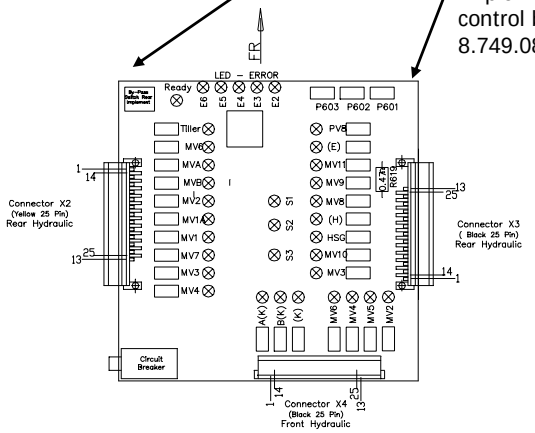
Front ball valve
8.025.966.000

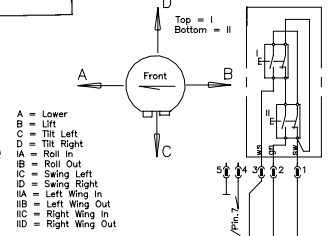
Blade float switch
7.331.163.000
Symbol
7.331.140.508



Manual toggle to
lift rear implement

Implement
control board
8.749.081.000



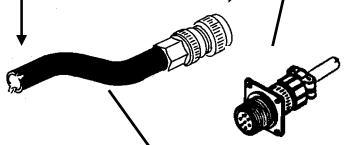


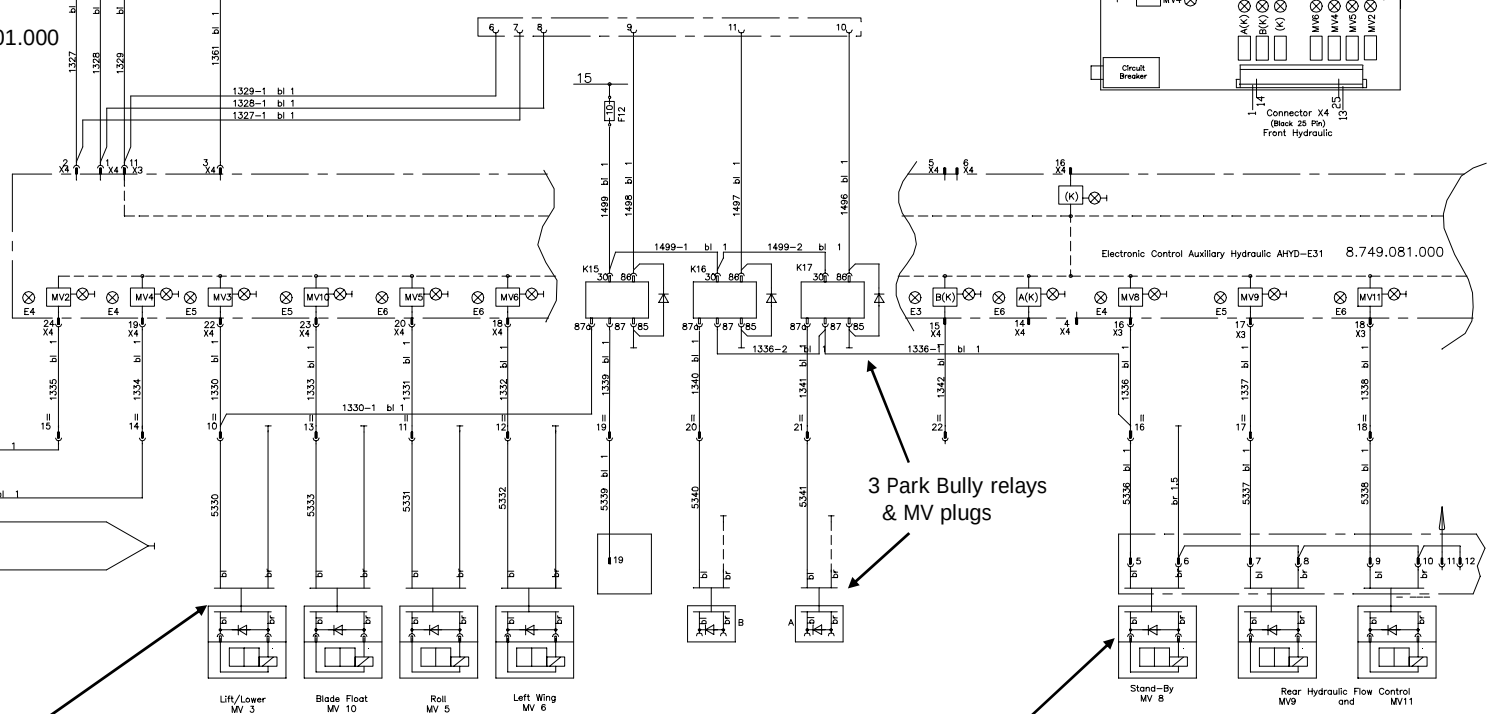
Connector for Park Bully
equipped vehicles

Complete harness
819.4100.002.01
Hose only
819.4100.202.01

Plug 7.235.101.000

Plug 7.231.151.000





3 Park Bully relays
& MV plugs

Mounted on vehicle behind grill
Front Hydraulic

	D +	MV2	MV3	MV4	MV5	MV6	MV10	LED ERROR E4 – E6 = 0
Top Button		1	1		1			
Bottom Button			1	1		1		
Float Switch	1						1	

Color Code

BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

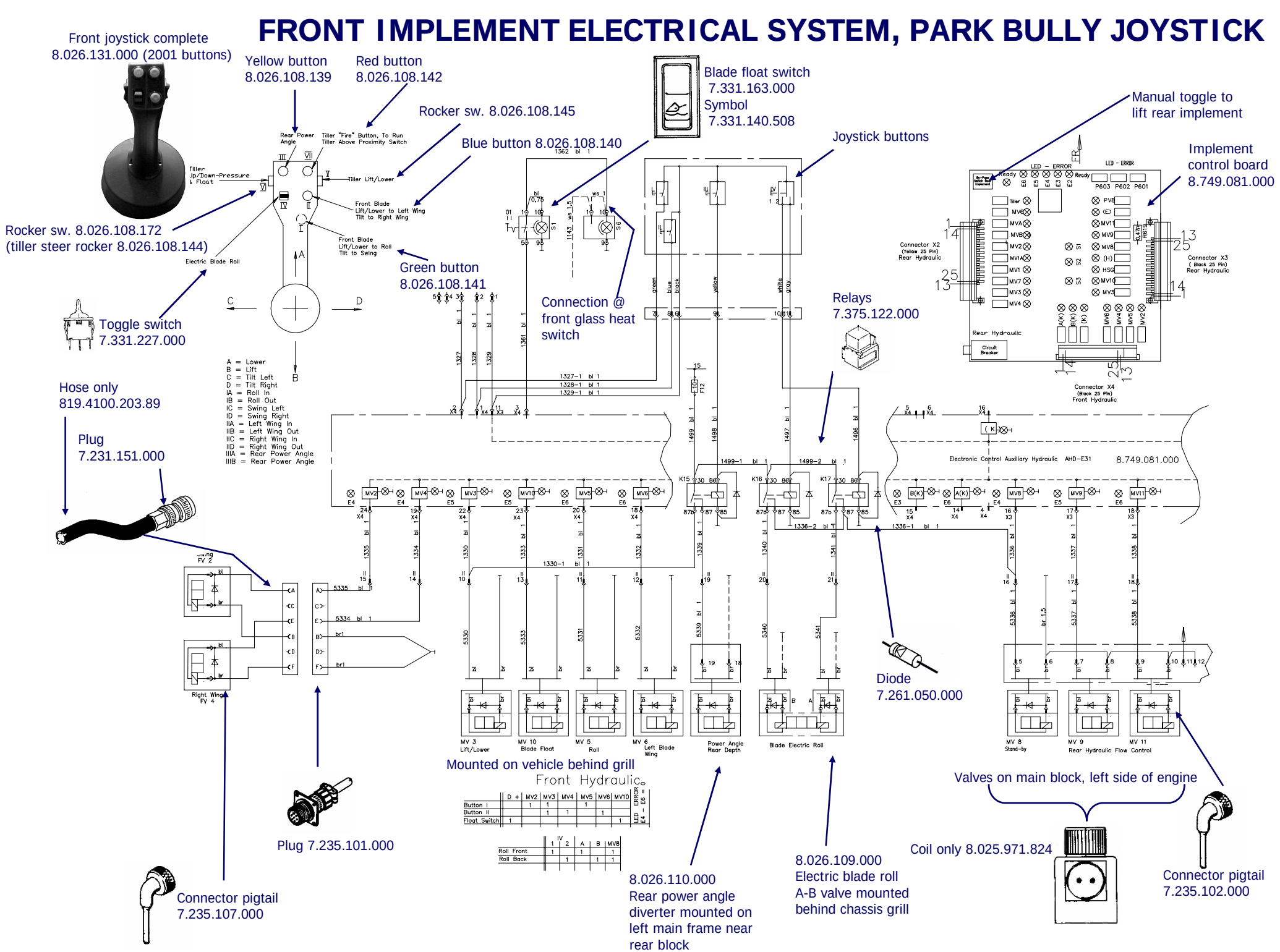
Valves on main block, left side of engine

Connector pigtail
7.235.107.000

Connector pigtail
7.235.102.000

Coil only 8.025.971.824

FRONT IMPLEMENT ELECTRICAL SYSTEM, PARK BULLY JOYSTICK



REAR IMPLEMENT ELECTRICAL SYSTEM, (WHEEL & FRONT BALL HANDLE)

(8.749.081.000 Board)

Connector plug for stick control vehicle

Potentiometer up/down pressure 8.749.114.000

Toggle tiller steering 7.331.227.000

Center / float 7.331.174.000 symbol 7.331.140.511

Connector for joystick equipped vehicle

Tiller up/down 7.331.174.000 symbol 7.331.137.226

Tiller depth 7.331.171.000 symbol 7.331.137.227

Up/float/down pressure switch 7.331.192.102 symbol 7.331.137.226

Auto-lift in reverse lock-out 7.331.179.000 symbol 7.331.140.522

Power supply with key on

Power supply with key on

Cab latch switch 7.311.143.000

Cab tilt External button (@ cab pump) 8.312.088.126

Connector block under dash

Right proximity switch 7.346.041.000

13 pin plug 7.235.109.000 Pin only 7.235.109.006

Pigtail conn. 7.235.102.000

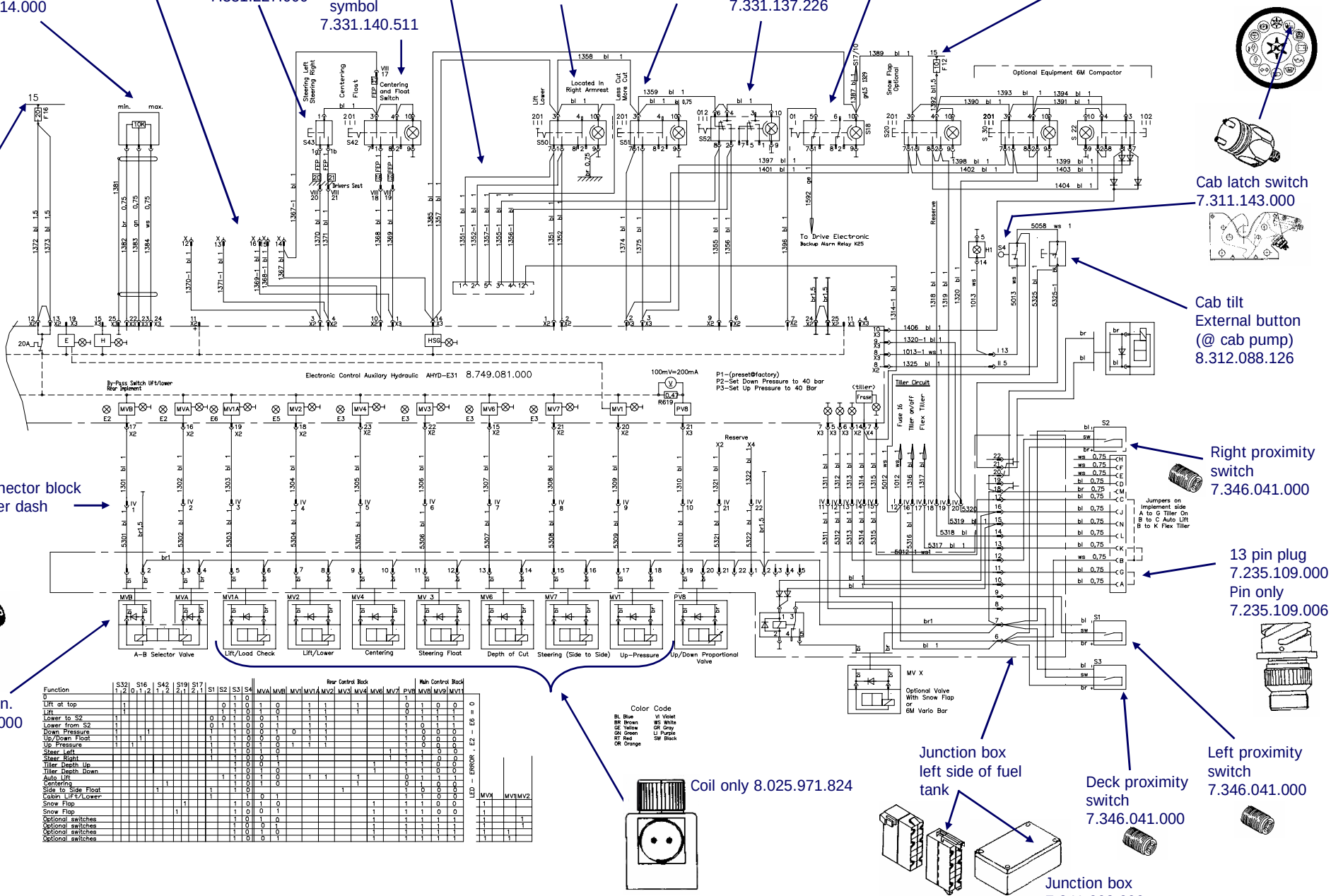
Coil only 8.025.971.824

Junction box left side of fuel tank

Deck proximity switch 7.346.041.000

Left proximity switch 7.346.041.000

Junction box 7.241.003.000



REAR IMPLEMENT ELECTRICAL SYSTEM, (STICK CONTROLLERS & JOYSTICK HANDLE)

(8.749.081.000 Board)

Potentiometer up/down pressure 8.749.114.000

Tiller steering buttons on left 8.026.108.142

Center / float (on left sticks) p/n 02012

Front joystick handle complete 8.749.131.000

Up/float/down pressure switch (in joystick) 8.026.108.172

Rear up/down rocker switch 8.026.108.145

Tiller depth 7.331.171.000 symbol 7.331.137.227

Auto-lift in reverse lock-out 7.331.179.000 symbol 7.331.140.522

Power supply with key on

Tiller start button (red) 8.026.108.142

Connector plug for wheel veh.

Power supply with key on

Cab latch switch 7.311.143.000

External button (@ cab pump) 8.312.088.126

Right proximity switch 7.346.041.000

Connector block under dash

13 pin plug 7.235.109.000 Pin only 7.235.109.006

Pigtail conn. 7.235.102.000

Left proximity switch 7.346.041.000

Rear up/down rocker sw. 8.026.108.145

Junction box left side of fuel tank

Deck proximity switch 7.346.041.000

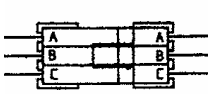
Up-press. rocker sw. 8.026.108.172

Junction box 7.241.003.000

TILLER DEPTH ADJUSTMENT CIRCUIT

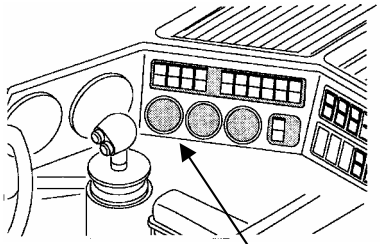
Potentiometer 8.212.676.752
in hydraulic cylinder

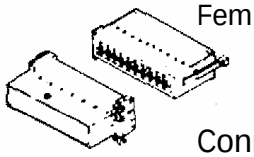
3 pin plug tied to harness left side of fuel tank



Pin, male 7.231.000.077
Pin, fem 7.231.000.073
Plug, male 7.231.000.072
Plug, fem 7.231.000.076

Plastic plug
Male 7.231.117.000
Fem. 7.231.122.000



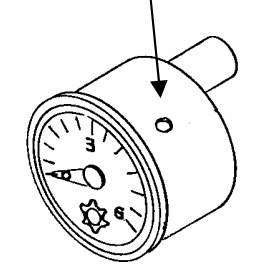


Connector
male pin
(one wire) 0.023.703.007
(two wire) 0.023.703.008
female pin
(one wire) 0.023.716.001
(two wire) 0.023.716.002

Ground wire
to fuel gauge

Tiller depth gauge
8.749.085.000

Calibration screw in gauge



Color Code

BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

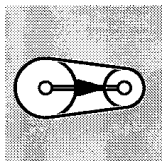
To outside
temp. gauge

Power with
key on

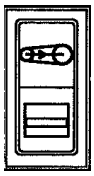
Power with main
light switch on

To right tail light
& air filter restriction light

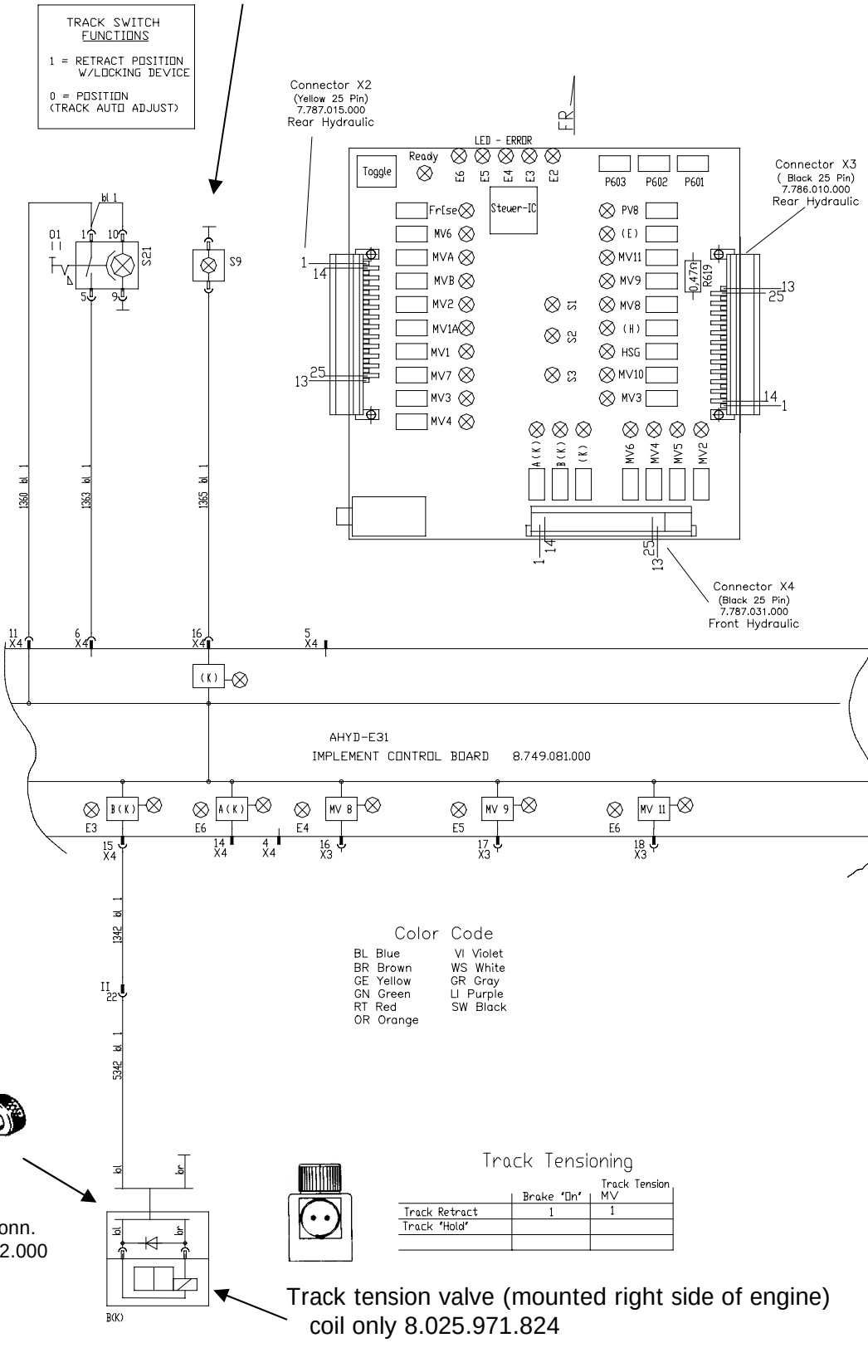
TRACK TENSION



Track tension indicator light



Track tension rocker switch 7.331.179.000
symbol 7.331.140.507



Pigtail conn. 7.235.102.000

Track tension valve (mounted right side of engine) coil only 8.025.971.824

Track Tensioning

	Brake 'On'	Track Tension MV
Track Retract	1	1
Track 'Hold'		

GAUGES, SENDERS & HOUR METER

Outside temp sensor
8.749.037.000 (mounted
to right mirror bracket)

Test; 3 ohms when empty
185 ohms when full
Fuel tank sender
(190L tank)
8.743.755.000

or

Sender 8.749.255.000 (300L)
8.749.263.000 (190L)
7.231.395.000 Sender plug
7.231.310.162 Term pin
7.231.310.182 Rubber seal

Tip:
Open in sensor loop
display "-22" on gauge

Instrument cluster

Tach/Hour meter
8.749.231.000

ADM 2 engine control
(under dash) 825.4100.180.13

Outside temp gauge
8.749.079.000 (F.)

Alternator 7.421.356.000

Ignition
switch

Power supply on
at all times

Relay 7.375.201.000
on when alternator
charging

Power supply
with key on

Power with main
light switch on

Light switch 7.331.155.000
Symbol 7.331.140.202

Coolant temp gauge
8.743.803.000

Fuel gauge
8.743.805.000

Tiller depth gauge
(also on page 19)

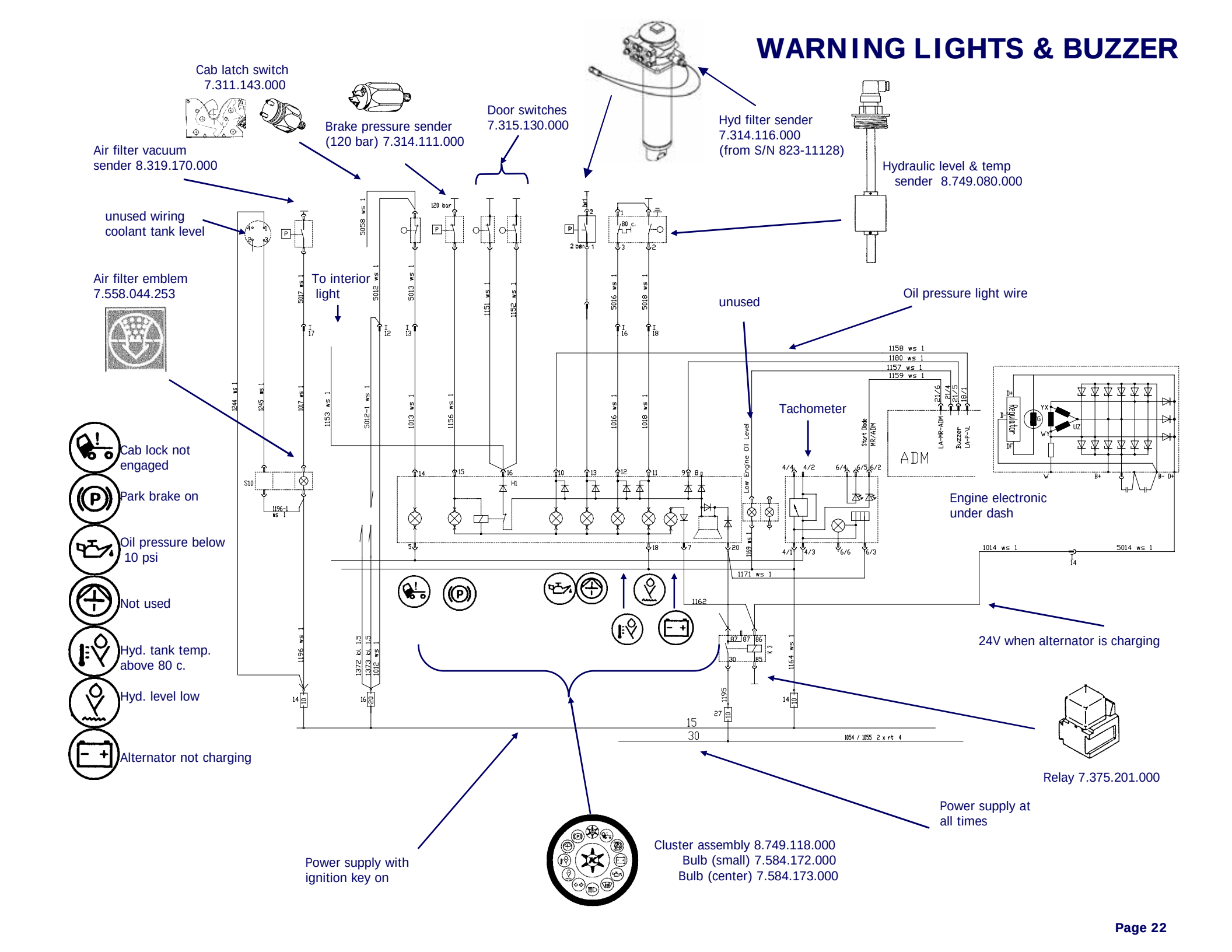
PLD control box
on engine
(special order item)

Engine coolant temp sender
02050

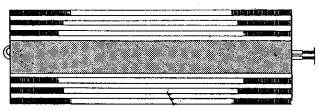
8.312.089.078

Tachometer input signal

WARNING LIGHTS & BUZZER



RADIO & DRIVERS SEAT



Voltage converter
(behind passenger seat)
7.761.000.093

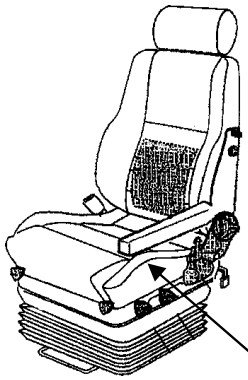
Power with
key on

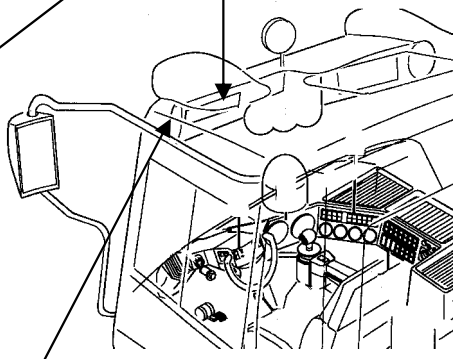
To front wipers

Vehicle prepped for
2-way radio

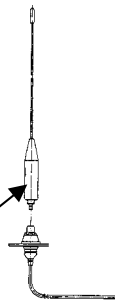
Plug behind seat

Radio w/CD 7.761.076.000 (24V)
Radio AM/FM cass. 82.7.65200 (12V)
Radio w/CD 7.761.072.000 (12V)





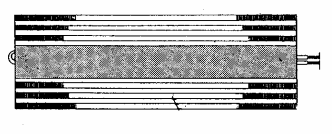
Speakers
7.761.573.000



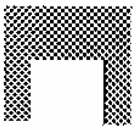
Antenna 7.761.649.000

RADIO & DRIVERS SEAT

w/Alpine CDA-9820 XM Radio **(up to Fall 2004)**



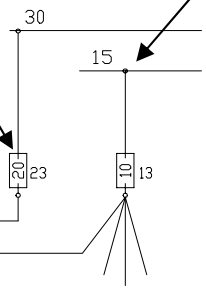
Existing voltage converter
(behind passenger seat)
7.761.000.093

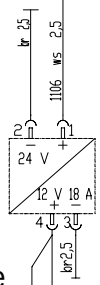


Move fuse bridge from
(22 & 23) to (23 & 24)

Change fuse to
power supply on
at all times

Power with
key on

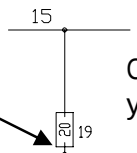




Connect to exterior temp
gauge wire # ws1154

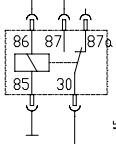
24/12 reducer
p/n 7.761.040.007

Use avail. term.
at base of fuse 19

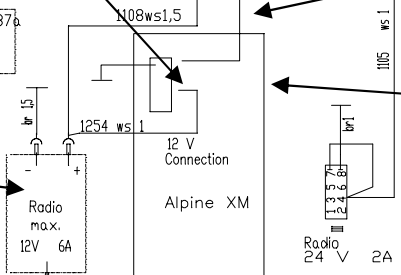


Connect to Alpine
yellow wire

Add relay, (interrupt
wire 1216 w/relay)

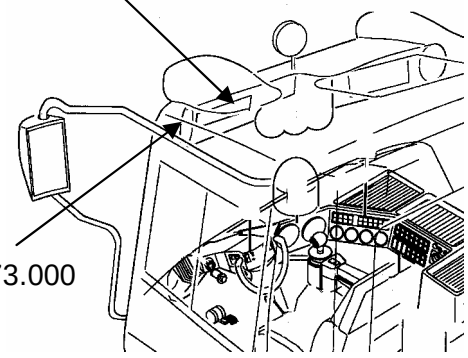


Connect to Alpine red wire

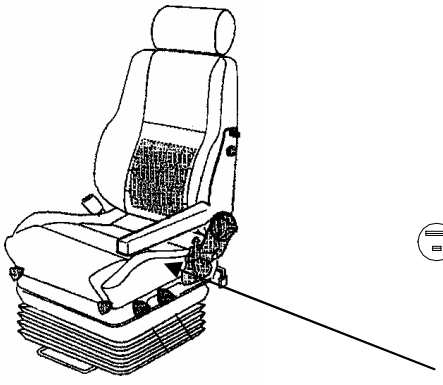


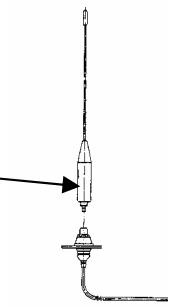
Radio w/CD & XM
p/n 82.7.65310

Vehicle prepped for
2-way radio



Existing
speakers
7.761.573.000





Existing antenna
AM/FM 7.761.649.000

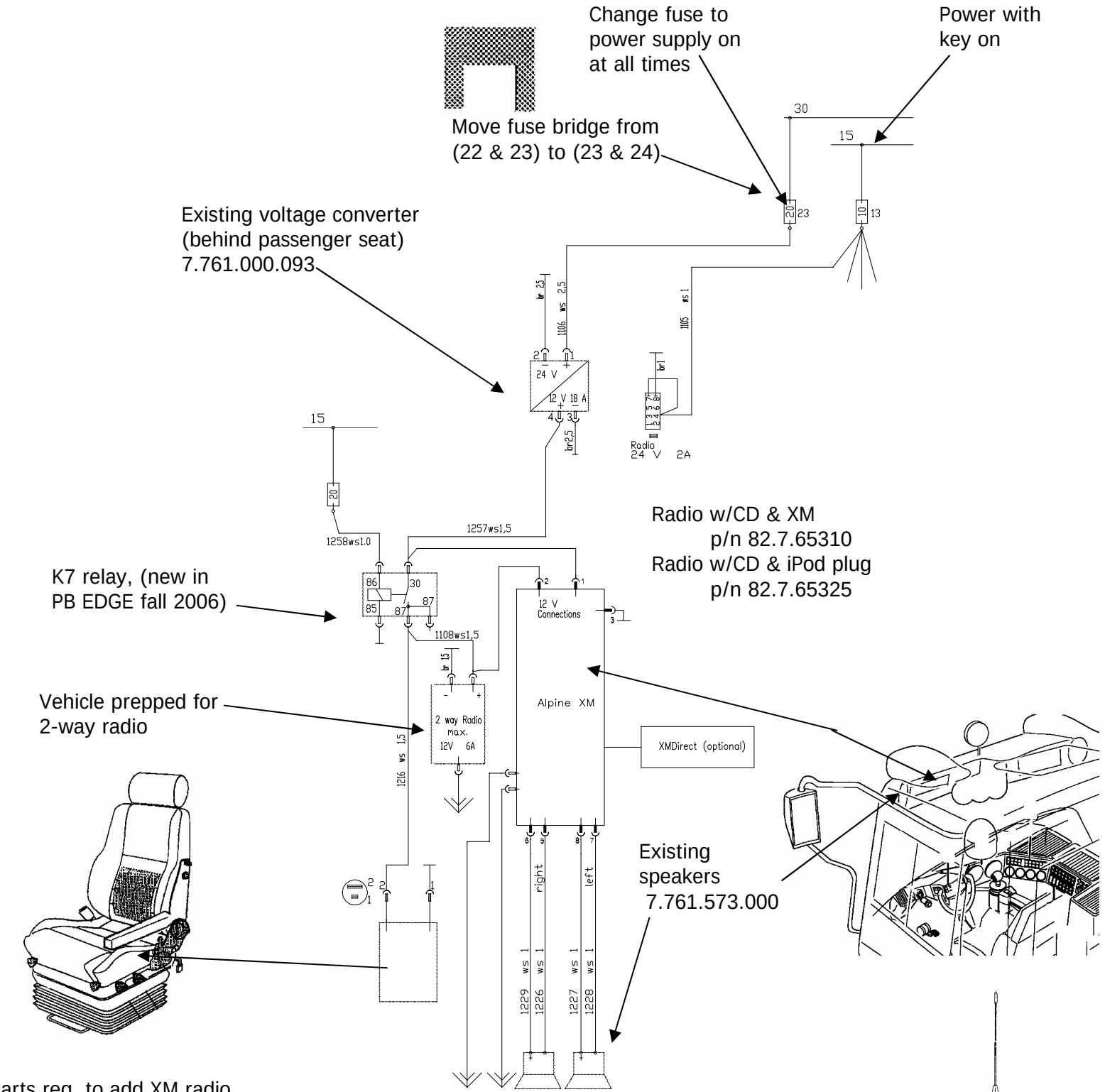
Add antenna XM 82.7.65311

Parts req. to add XM radio

1 – 82.7.65310 CDA-9820 XM radio
1 – 82.7.65311 American Int. XM antenna
1 – 7.761.040.007 Small 24/12 reducer
16 – 0.023.706.019 Fem. spade terminal
1 – 0.025.030.001 Connector strip
2 – 0.023.703.008 Fem. pin term. Large
1 – 7.375.197.000 Relay
1 – 7.375.112.001 Base
5 – 0.023.706.001 Terminal

RADIO & DRIVERS SEAT

w/Alpine CDA-9820 XM Radio (from Fall 2006) or CDA-9883



Parts req. to add XM radio

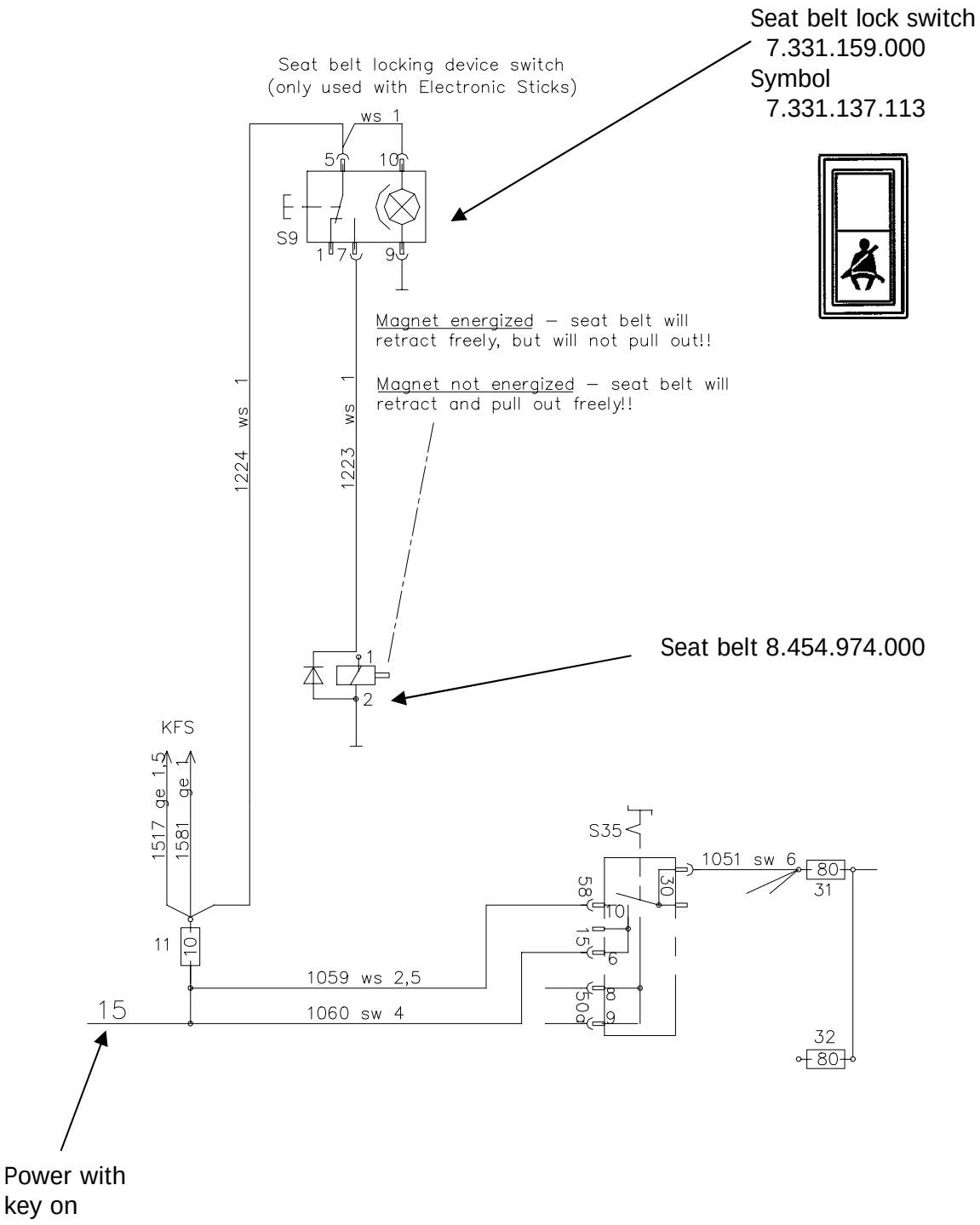
1 – 82.7.65310 CDA-9820 XM radio
(no wired iPod plug)

New for 2007

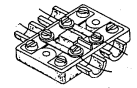
1 – 82.7.65325 CDA-9883 Radio with iPod plug
1 – 82.7.65335 Extension cord radio to iPod (optional)
1 – 82.7.**65340** XMDirect tuner box (req. only for XM)

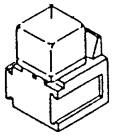
DRIVERS SEAT BELT TENSION LOCK

(STICK CONTROLS & WINCH VEHICLES)



FRONT TOP LIGHTS - HIGH/LOW BEAM & PARK LIGHTS





Relay
7.375.201.000

Ignition switch

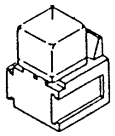
Main fuse 80A
0.026.010.007

Power to directional lights and horn

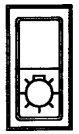
Power supply with ignition key on

Power supply with main light switch on

Directional light stalk w/high beam switch
814.4100.130.05



Relay
7.375.197.000

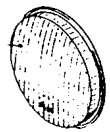


Light switch 7.331.155.000
Symbol 7.331.140.202

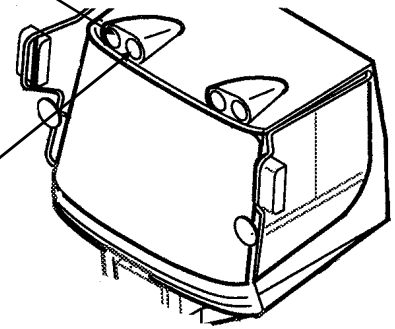
Color Code

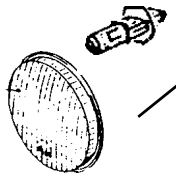
BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

Parking light bulb
7.584.067.000



Lens 7.512.000.009
High/low beam bulb H-4 70/75w 24V
7.586.206.000





Lens 7.517.112.003
Low beam bulb H-1 70w 24V
7.586.201.000

High beam indicator light bulb 7.584.172.000

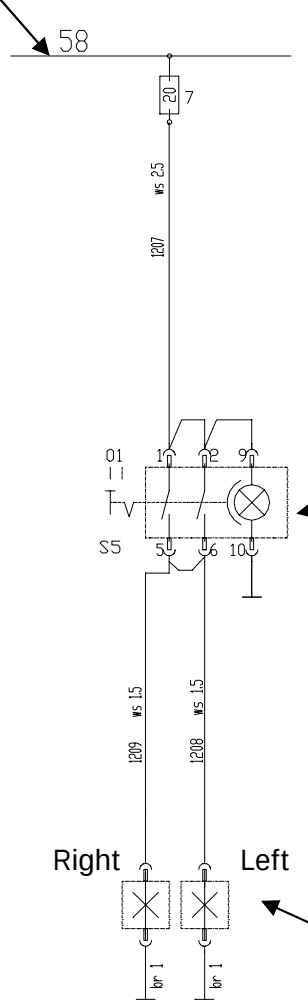
H-4 bulbs

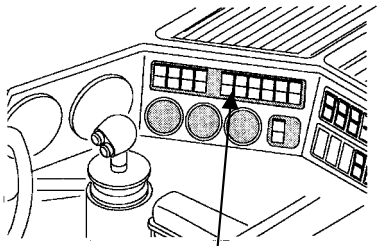
H-1 bulbs

Parking light bulb
7.584.067.000

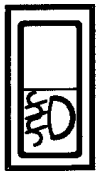
FRONT FOG / XENON LIGHTS (OPTIONAL)

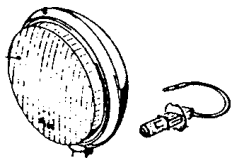
Power supply with main lighting rocker on





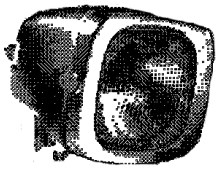
Fog light switch
7.331.164.000
Symbol
7.331.141.205



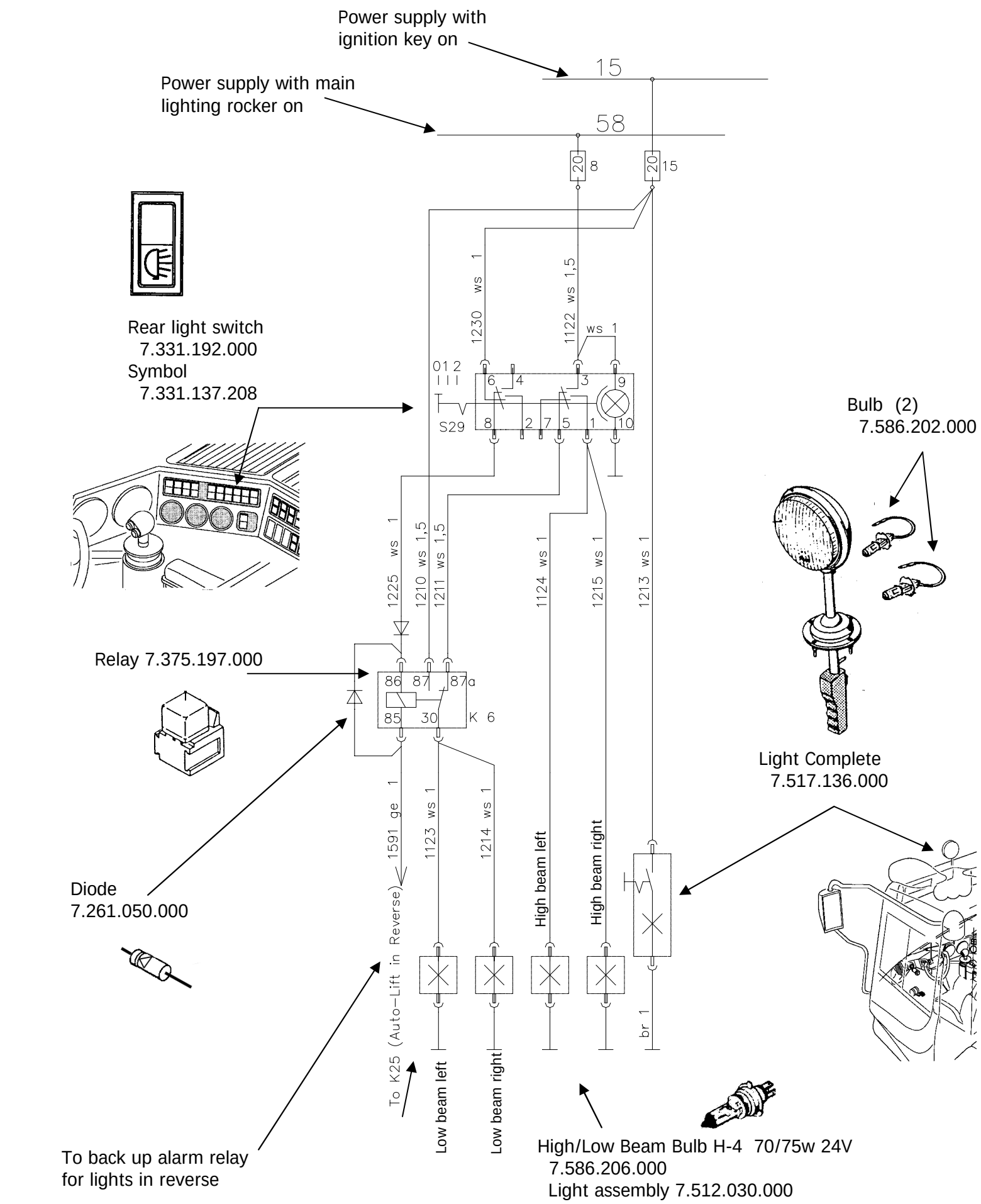


FOG
Light assembly
7.513.018.000
Bulb H-3
7.586.202.000

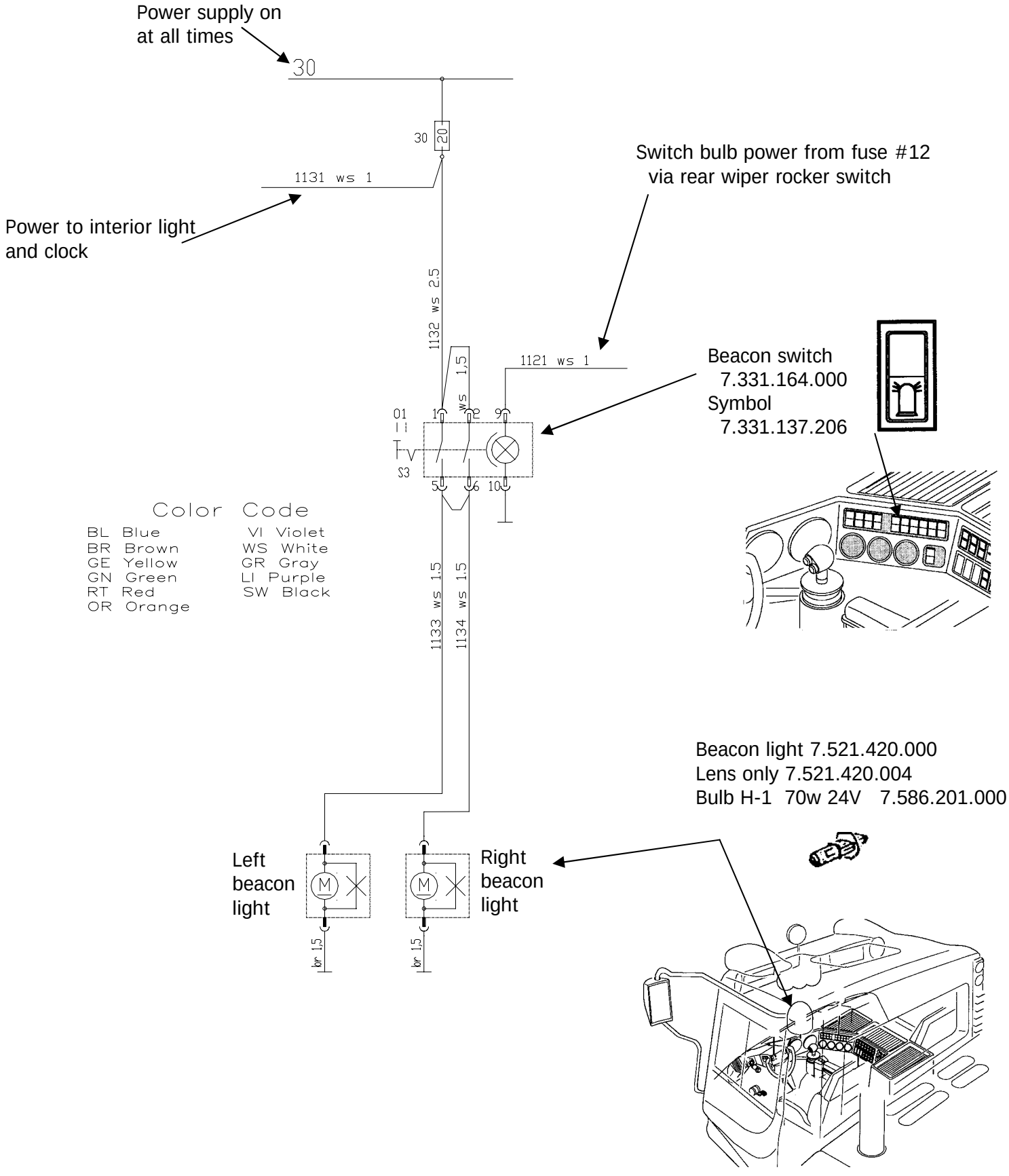
XENON
Light assembly
7.517.134.000
Bulb
7.582.010.000



REAR TOP LIGHTS & HAND SPOTLIGHT



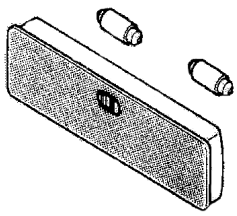
BEACON LIGHTS



INTERIOR LIGHT, CLOCK & UNDER CONSOLE LIGHT

Door Switches for Interior Light
7.315.130.000

Interior Dome Light
7.552.031.000
24V Bulb 7.583.066.000

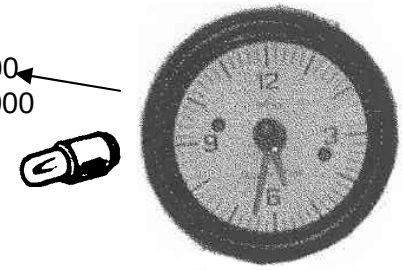


Connection at
warning cluster

Color Code

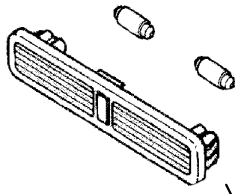
BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

Clock 8.749.077.000
Bulb 7.584.061.000



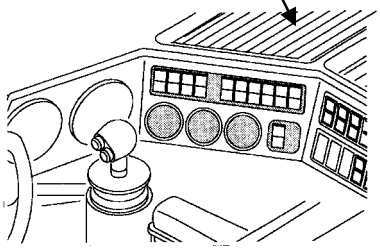
Power supply on
at all times

Light Under Console
7.552.028.000
24V Bulb 7.583.066.000



Power supply with main
lighting rocker on

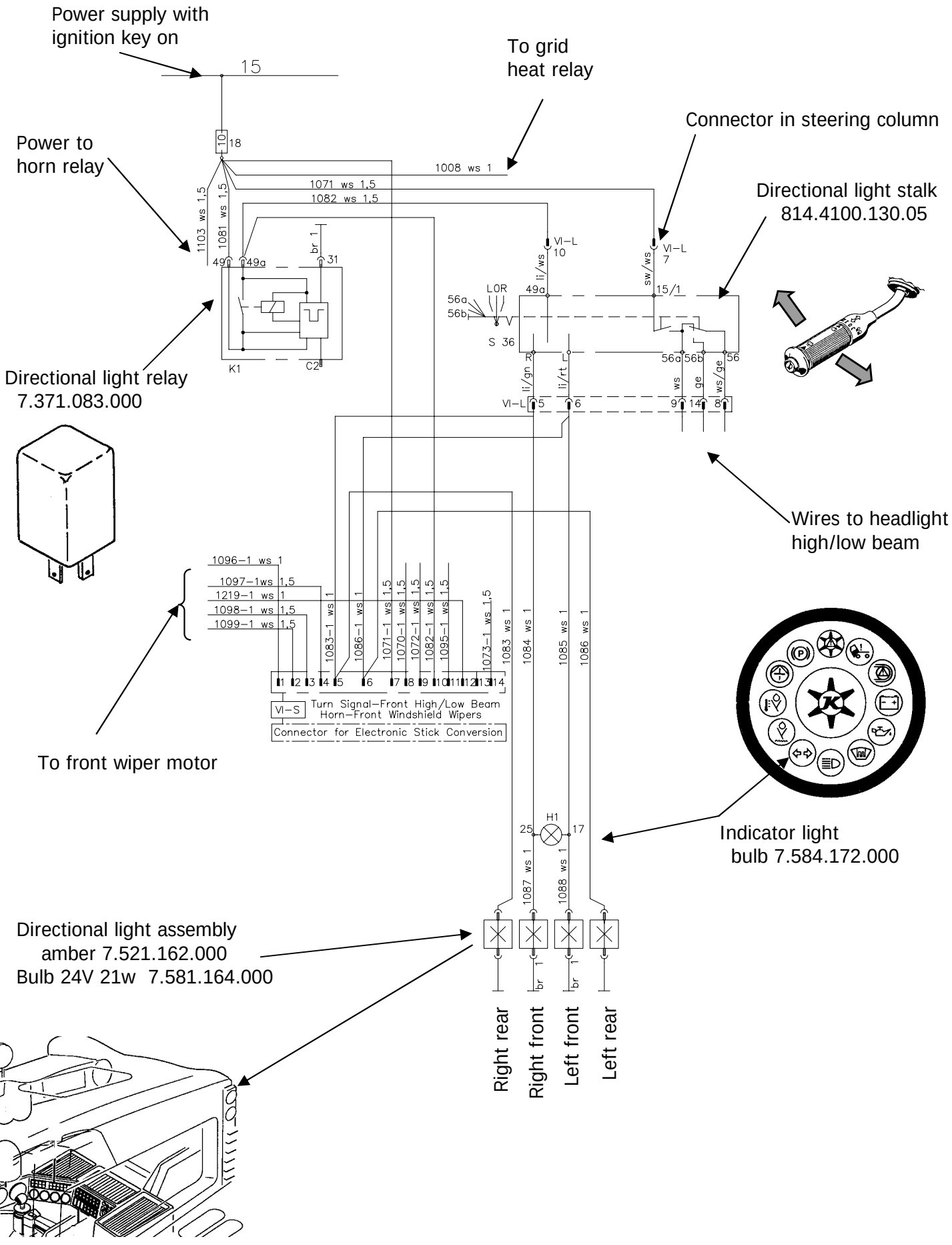
To gauge lights



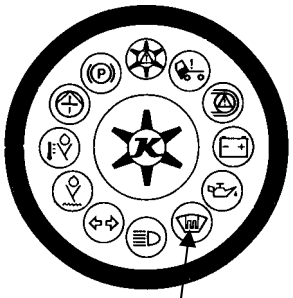
To beacon
light rocker

To taillights

DIRECTIONAL LIGHTS

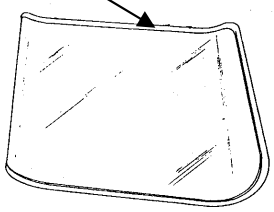


FRONT WINDSHIELD HEATING



Indicator bulb
7.584.172.000

Heater wire element
in glass



Glass 3.431.164.701

Color Code

BL Blue	VI Violet
BR Brown	WS White
GE Yellow	GR Gray
GN Green	LI Purple
RT Red	SW Black
OR Orange	

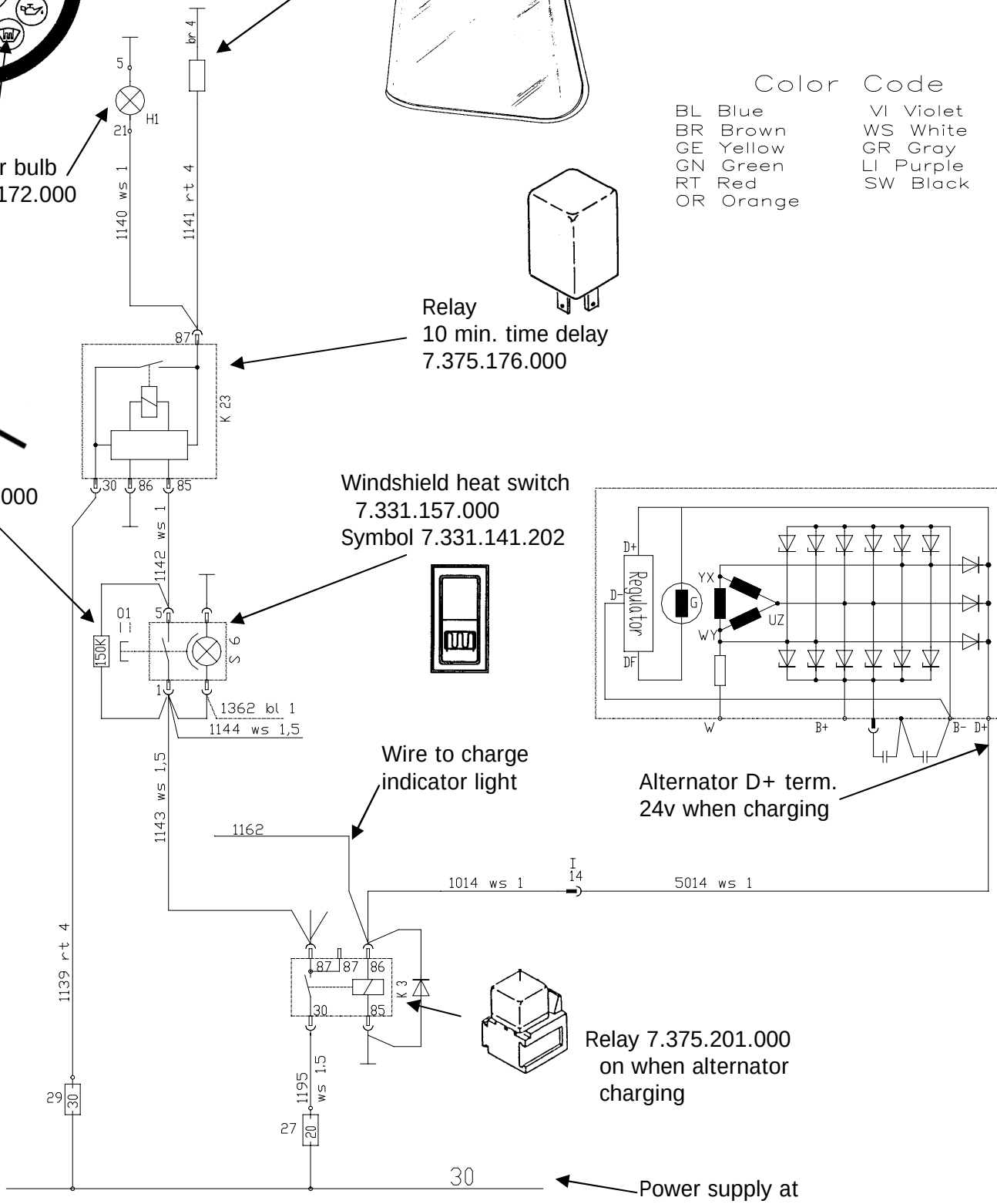
Relay
10 min. time delay
7.375.176.000

Resistor
7.261.078.000

Windshield heat switch
7.331.157.000
Symbol 7.331.141.202

Alternator D+ term.
24v when charging

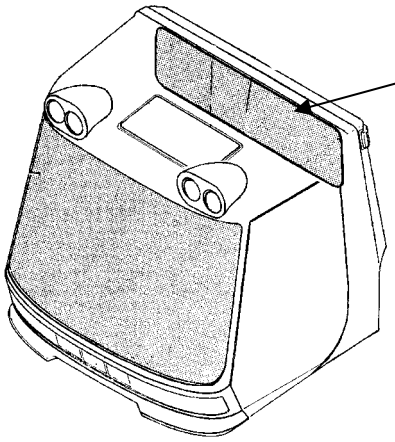
Wire to charge
indicator light



Relay 7.375.201.000
on when alternator
charging

Power supply at
all times

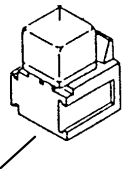
REAR WINDSHIELD HEATING



Heater wire element
in glass

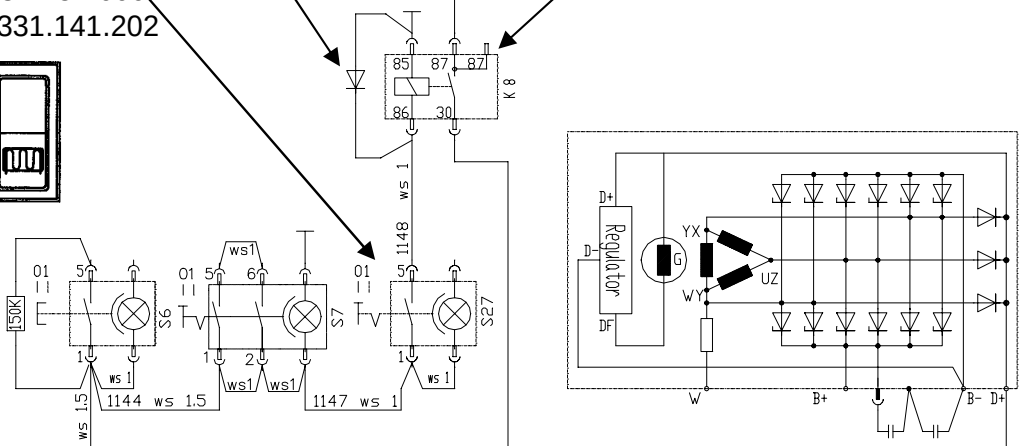
Glass 825.7720.110.05

Diode
7.261.050.000

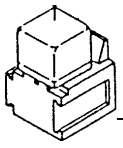


Relay 7.375.201.000

Rear glass heat
switch 7.331.154.000
Symbol 7.331.141.202



Alternator D+ term.
24v when charging

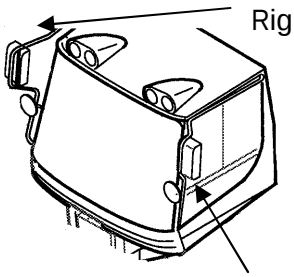


Relay 7.375.201.000
on when alternator
charging

Diode
7.261.050.000

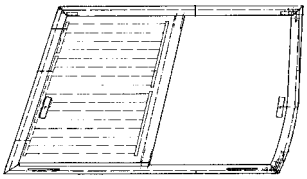
Power supply at
all times

SIDE WINDOW & MIRROR HEATING

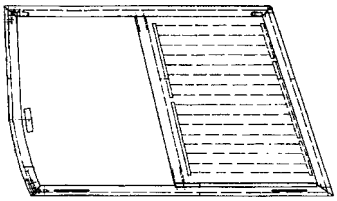


Right mirror

Left heated glass 8.771.489.003



Right heated glass 8.771.489.001

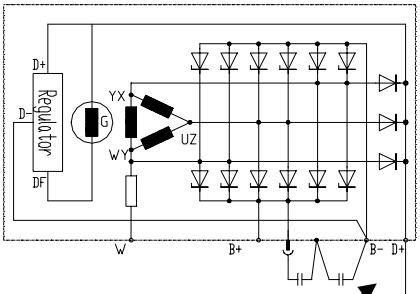


Left mirror

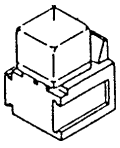
Switch and contact assembly on window 8.771.483.184

Mirror head complete 8.688.100.000
Glass only 8.688.100.253
Heat pad 8.688.062.213

Side glass heat switch 7.331.164.000
Symbol 7.331.137.235



Alternator D+ term. 24v when charging



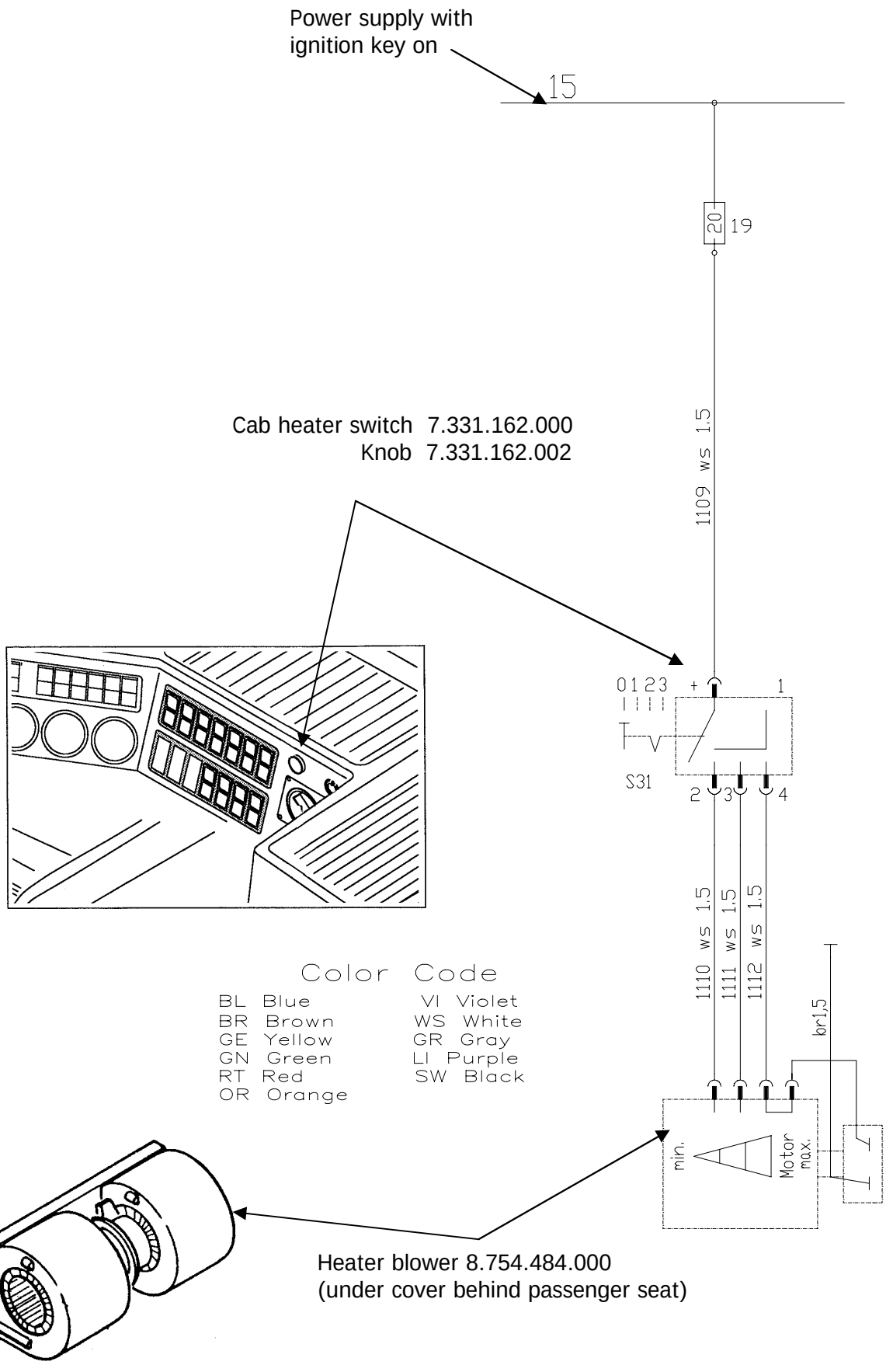
Relay 7.375.201.000
on when alternator charging

Diode 7.261.050.000

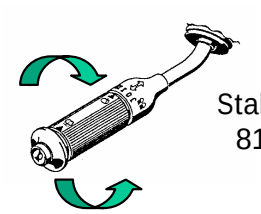
Power supply at all times

CAB HEATER

Power supply with
ignition key on



FRONT WIPERS & HORN



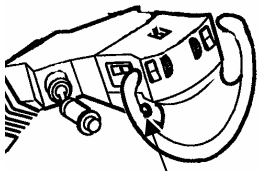
Stalk assembly
814.4100.130.05

Power supply with
ignition key on

15

To directional lights

Connection
at tiller switch

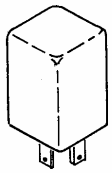


Two time
wipe button
7.311.071.000

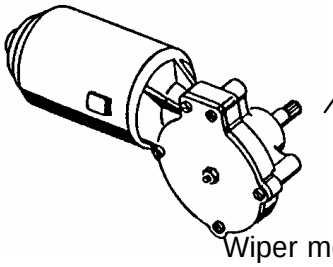
OR

Button on left
stick controls
8.026.108.142

To rear wiper relay



Wiper interval relay
(variable)
7.375.210.000
(see operator's manual)



Wiper motor
7.731.143.000

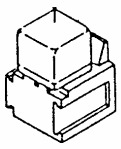
53b to case = 2.5 to 16 ohms

53 to case = 3.2 to 4.7 ohms

31 to case = 0 ohms

31b to case = 2.2 to 8.2 ohms

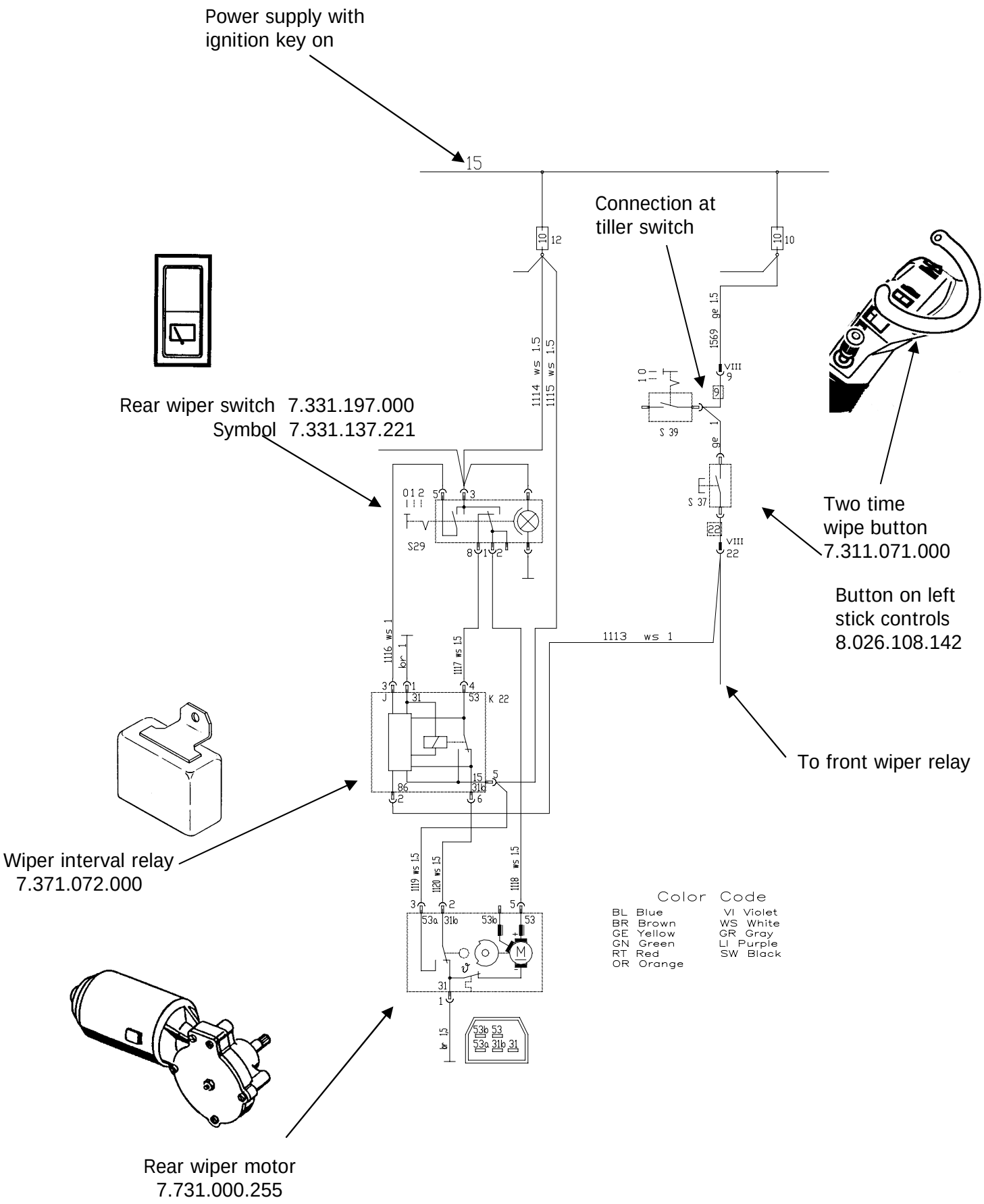
53a to case = open



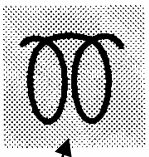
Horn relay
7.375.201.000

Horns
Low pitch 7.711.130.000
High pitch 7.711.131.000

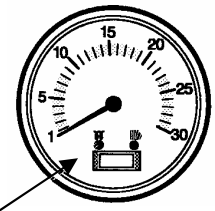
REAR WIPERS


Power supply with ignition key on
15
Connection at tiller switch
10
12
10
1114 ws 1.5
1115 ws 1.5
1569 ge 1.5
VIII 9
S 39
ge 1
S 37
22
VIII 22
Rear wiper switch 7.331.197.000
Symbol 7.331.137.221
S29
Two time wipe button 7.311.071.000
Button on left stick controls 8.026.108.142
1113 ws 1
1116 ws 1
br 1
1117 ws 1.5
K 22
To front wiper relay
Wiper interval relay 7.371.072.000
1119 ws 1.5
1120 ws 1.5
1118 ws 1.5
53a 31b 53b 53
31
1
Color Code
BL Blue
BR Brown
GE Yellow
GN Green
RT Red
OR Orange
VI Violet
WS White
GR Gray
LI Purple
SW Black
Rear wiper motor 7.731.000.255

ENGINE GRID HEATER

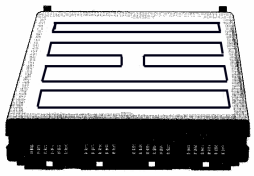


Grid heater square light
bulb 7.584.065.000
emblem 7.331.140.333
socket 7.558.051.000



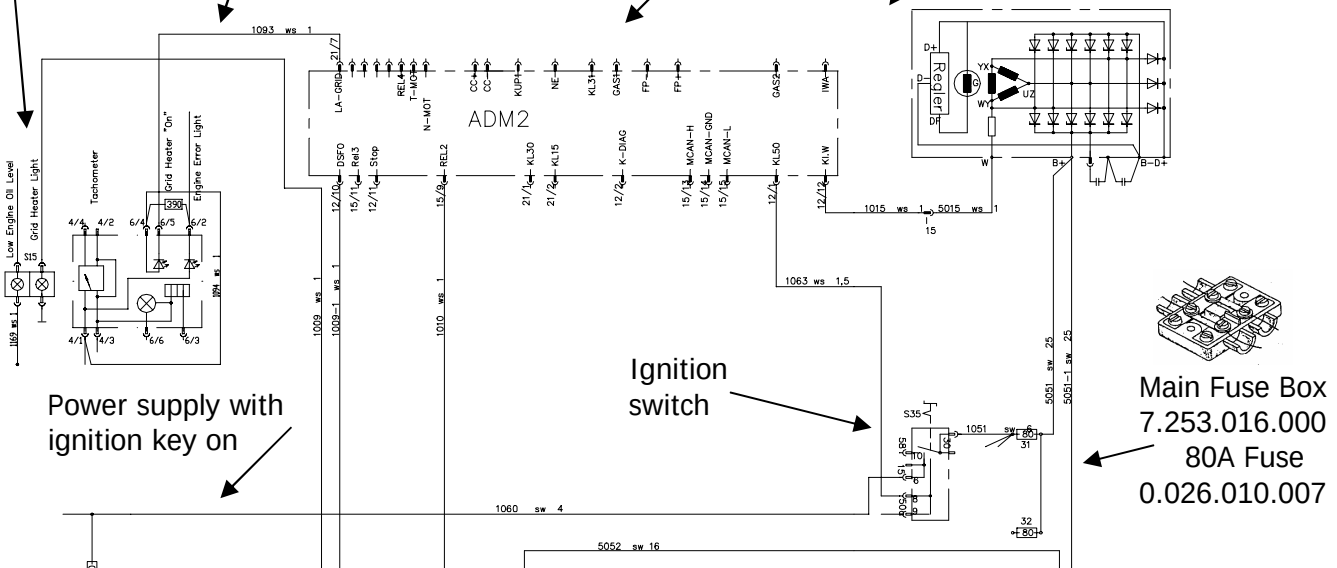
Tachometer 8.749.231.000

Grid heater light
in tachometer



ADM2 PB EDGE
825.4100.180.13

"ADM 2" uses engine electronic
temp sender to control grid heat



Power supply with
ignition key on

Ignition
switch

Main Fuse Box
7.253.016.000
80A Fuse
0.026.010.007

Power supply at all times
Connection to starter motor
positive lead

Inline fuse (inside
conn. box left side
of engine)
0.026.010.001

Fuse
823.4100.151.01

Grid heater
in air pipe
823.4100.150.01

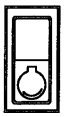
Grid heater relay
7.375.212.000

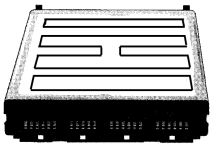
100 amp fuse
Holder 7.253.040.000
Fuse 0.026.010.008

ENGINE BRAKE

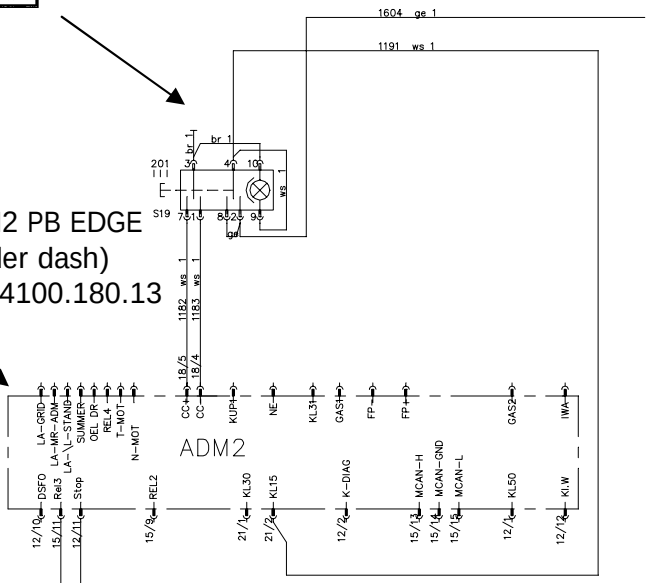
Connection at drive card dongel pin 8

Engine throttle set
rocker 7.331.171.000
Symbol 7.331.137.127





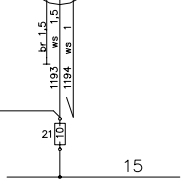
ADM2 PB EDGE
(under dash)
825.4100.180.13

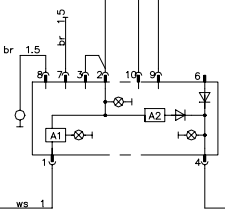


Connection to digital drive card. (plug on left side of card)

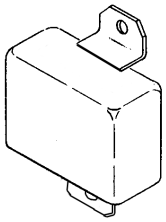
Mini-Diag plug socket

Power supply with ignition key on

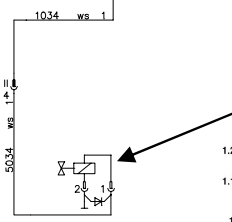


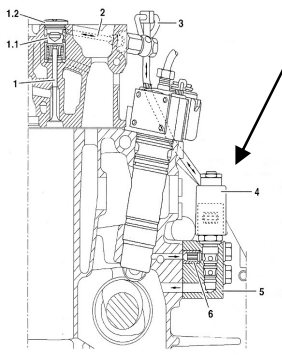


Engine brake relay
7.375.209.000
(under dash)



Engine brake valve
(left side of engine)





ENGINE FAN (ELECTRIC SHIFT)

Plug & Wire P/N's

Fan Side Plug

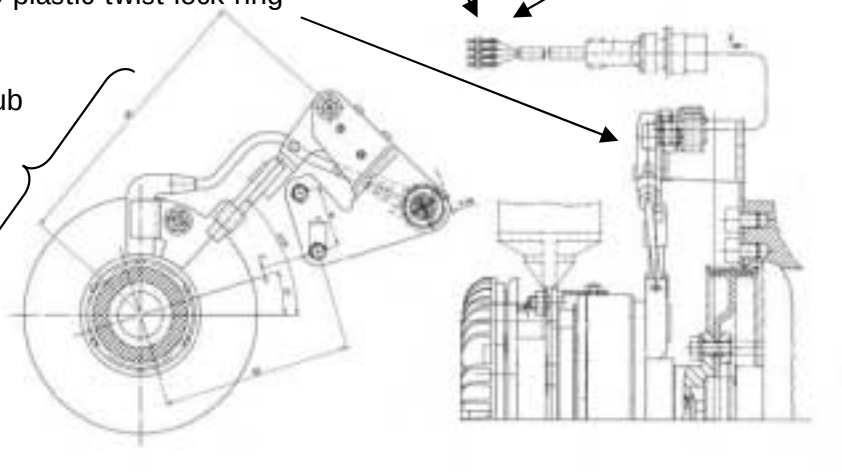
1 ea. 7.231.310.099 plastic 90
1 ea. 7.231.311.098 4 pin plastic plug
4 ea. 7.231.311.097 male term. Pin
4 ea. 7.231.310.101 yellow rubber seal
1 ea. 7.231.311.000 plastic twist lock ring

Vehicle Side **(fan to PLD)**

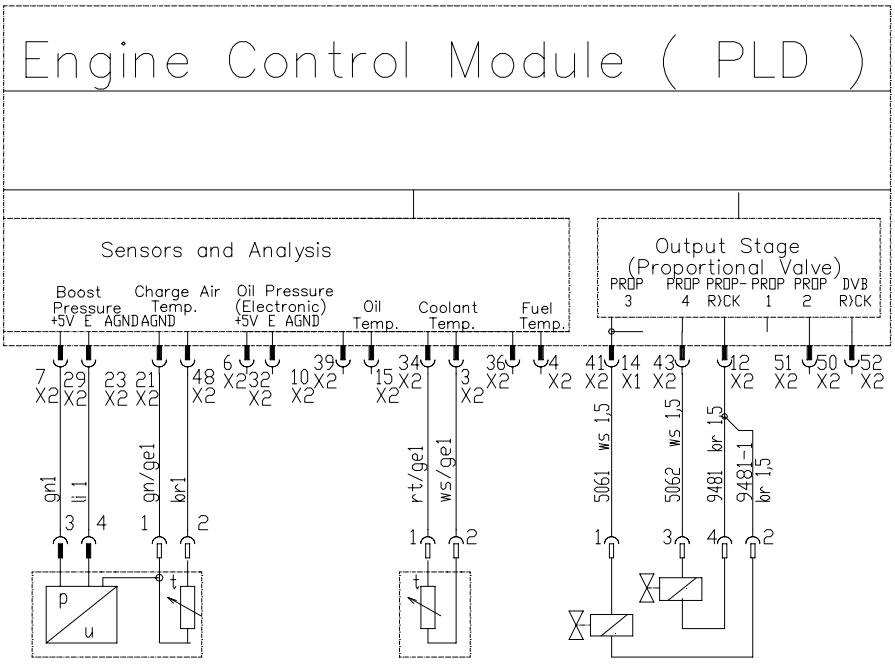
1 ea. 8.357.000.039 Harness

Pin 1: low speed power (yellow)
Pin 2: low speed ground (green) } 37 ohms
Pin 3: high speed power (white)
Pin 4: high speed ground (brown) } 12 ohms

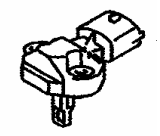
Electric Fan Hub Assembly
8.357.072.000



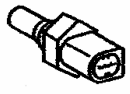
	Low Speed		High Speed	
	ON	OFF	ON	OFF
Charge air	50C	45C	55C	50C
Coolant	90C	86C	93C	89C



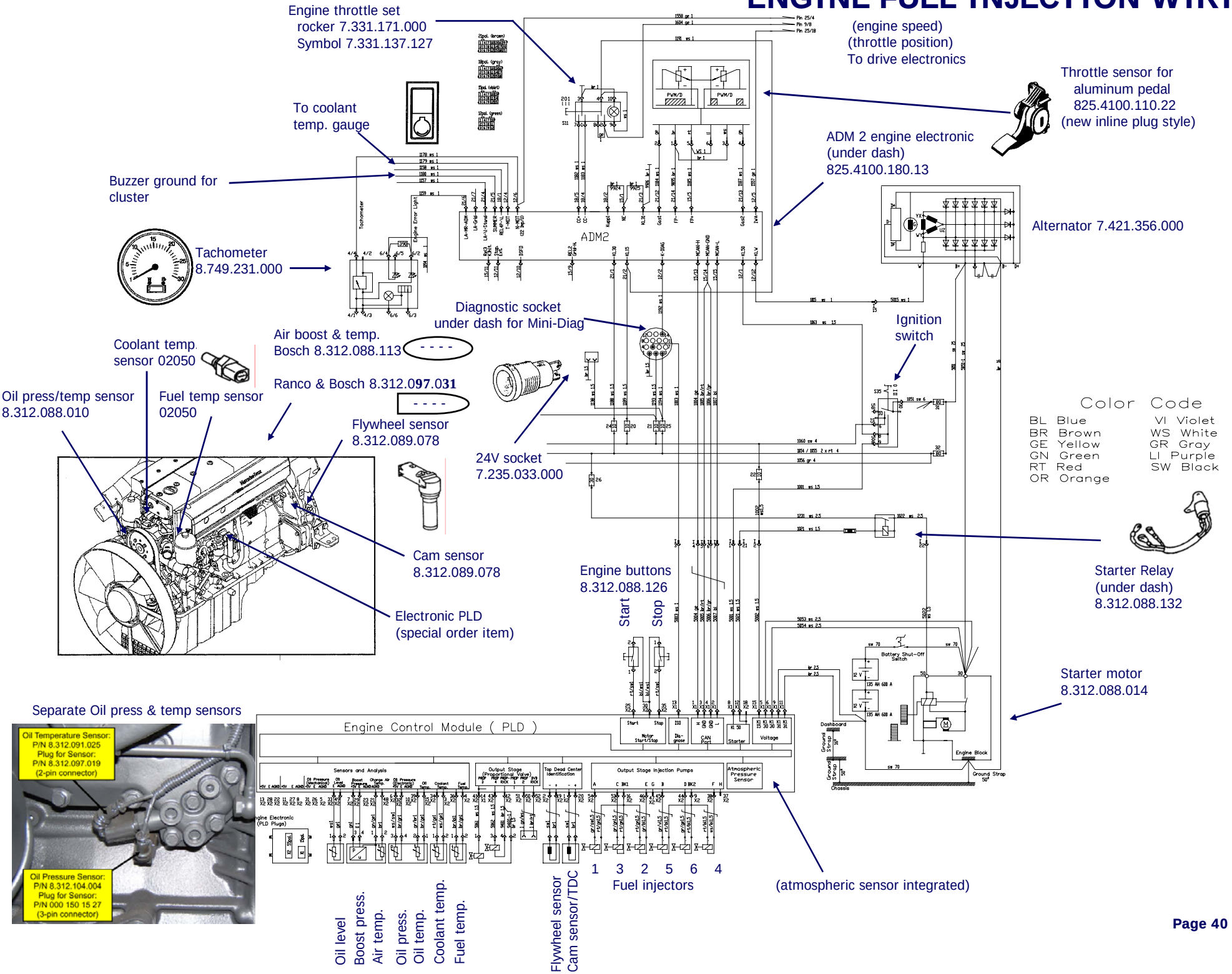
Air boost & temp.
8.312.088.113



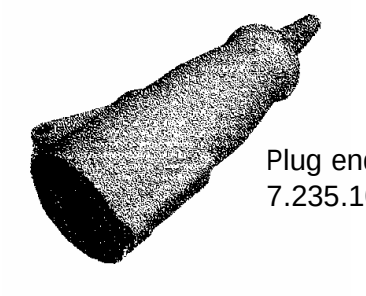
Coolant temp.
sensor 02050



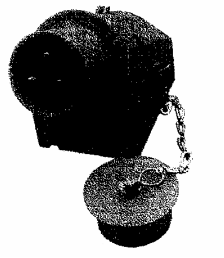
ENGINE FUEL INJECTION WIRING



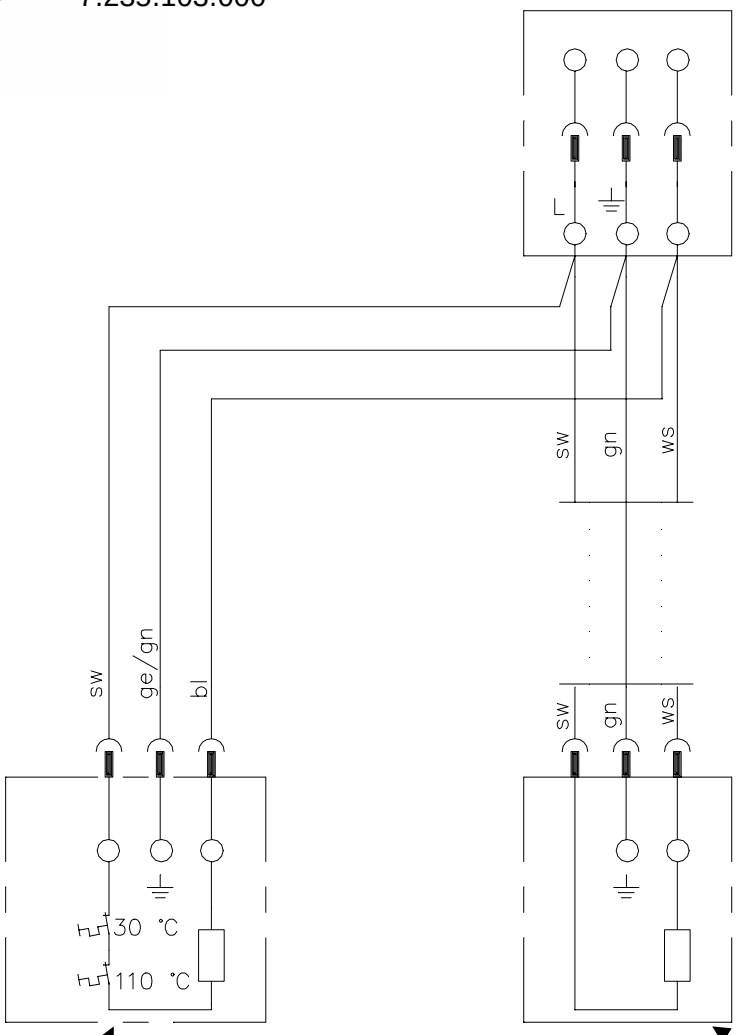
ENGINE BLOCK HEATER

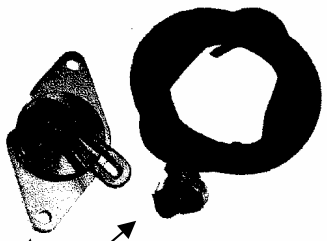


Plug end male 110V
7.235.103.000



Plug end female 110V
7.231.128.000

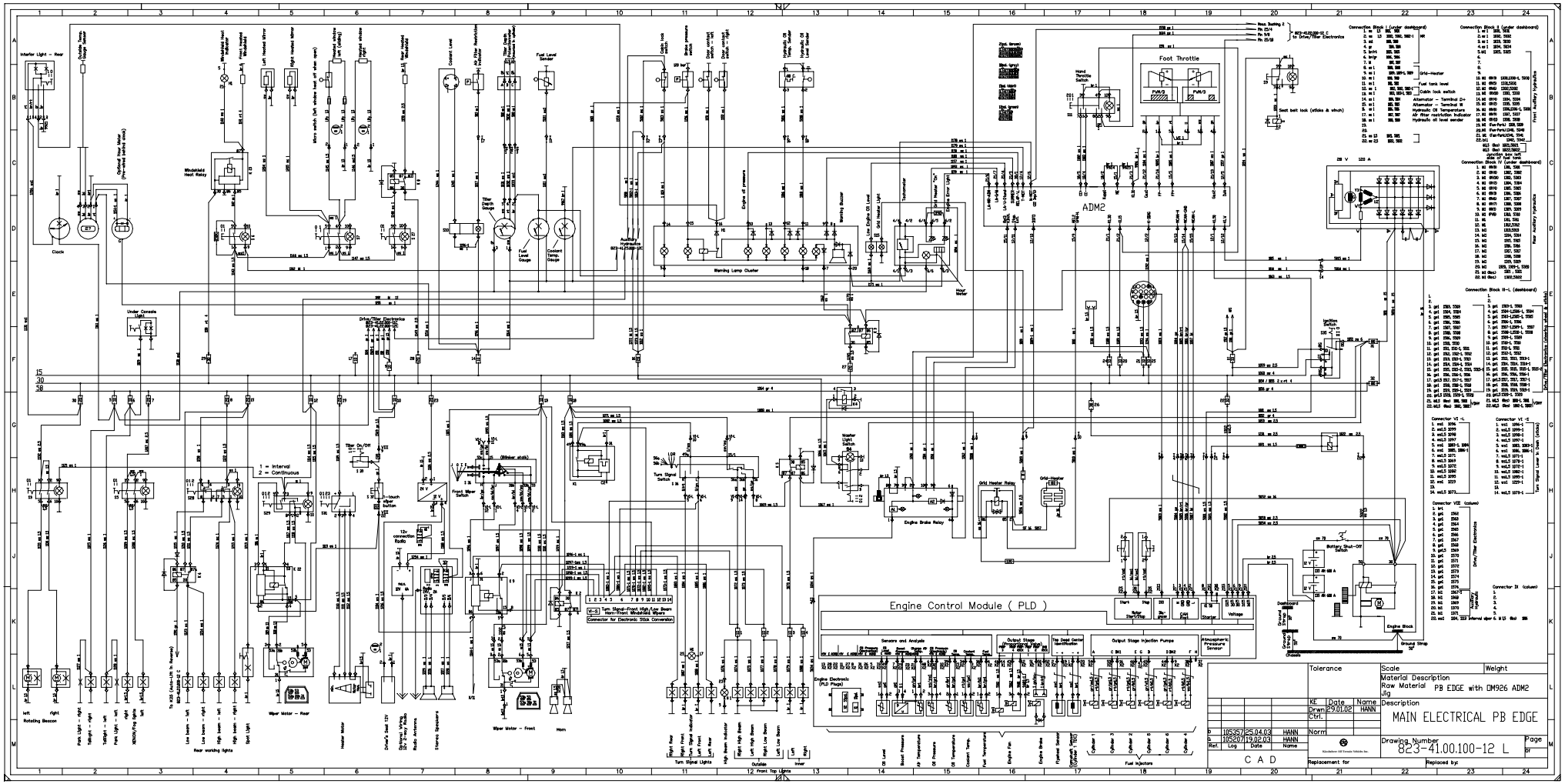




Hydraulic tank heater
(optional)
8.441.312.000

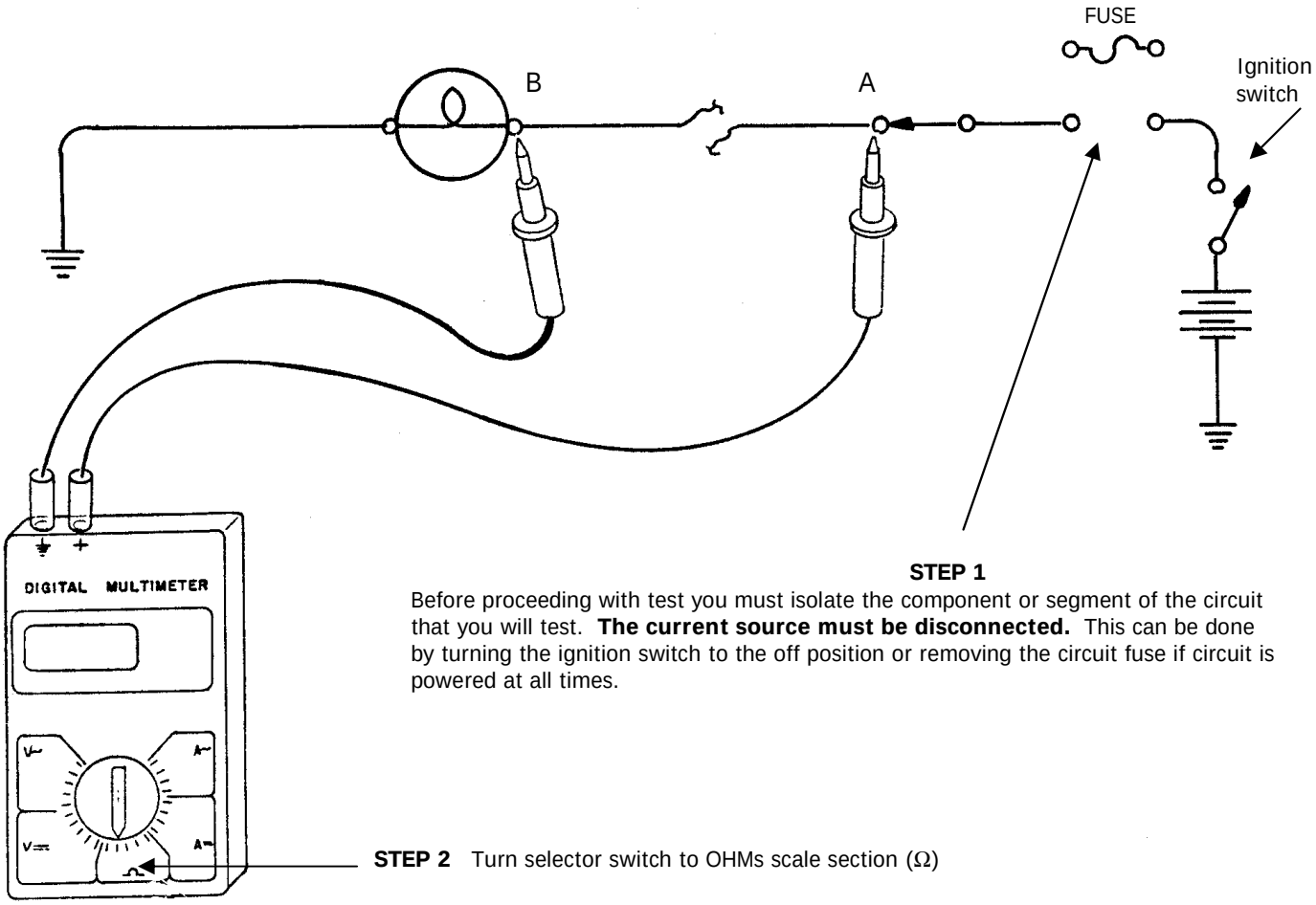
Engine block heater
for freeze plug
(1000w)
8.441.517.000

PB EDGE MAIN VEHICLE ELECTRICAL



TEST FOR OPEN / OHMMETER - SERIES CIRCUIT

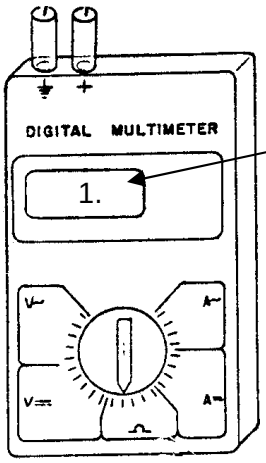
The ohmmeter section of your multimeter can be used to check for continuity between two points in a circuit.



STEP 1

Before proceeding with test you must isolate the component or segment of the circuit that you will test. **The current source must be disconnected.** This can be done by turning the ignition switch to the off position or removing the circuit fuse if circuit is powered at all times.

STEP 2 Turn selector switch to OHMs scale section (Ω)



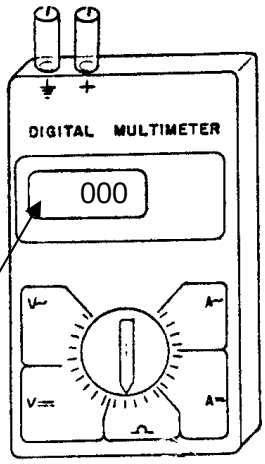
STEP 3 Connect meter probes to points A and B.

1. A break or open between "A" and "B" will indicate a high infinite resistance which will appear on your meter as

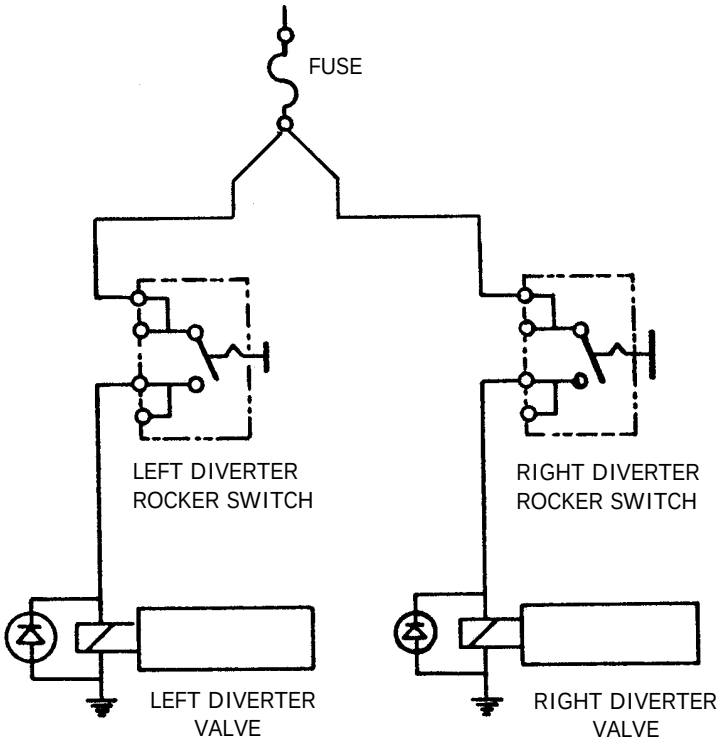
   1. OR 0L

2. If there is continuity between points "A" and "B" (no break) a very low resistance, usually zero OHMs will appear on your meter as

   000

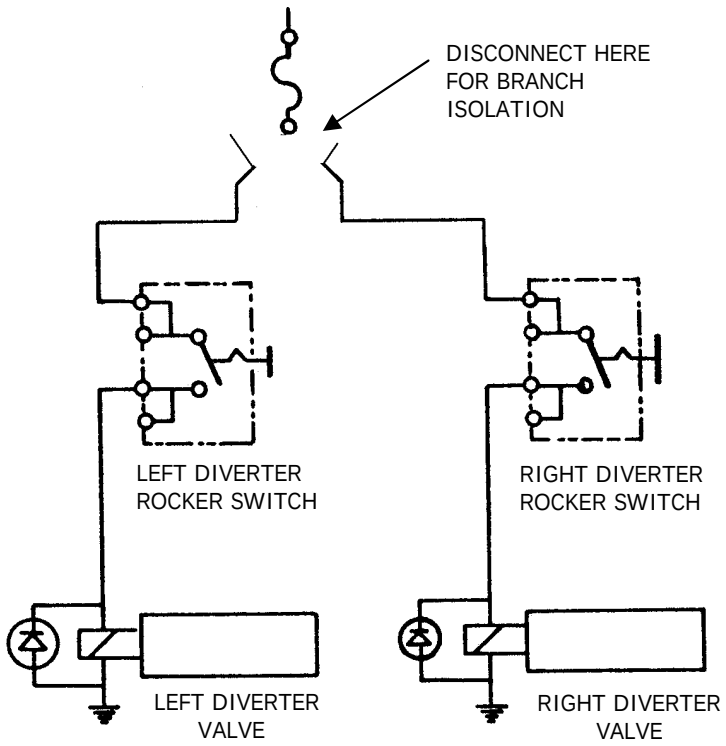


TEST FOR OPEN / OHMMETER - PARALLEL CIRCUIT



A series circuit as shown on the previous page has only one current path. However, a parallel circuit as shown at the left can have several current paths. You must keep this in mind when troubleshooting parallel circuits.

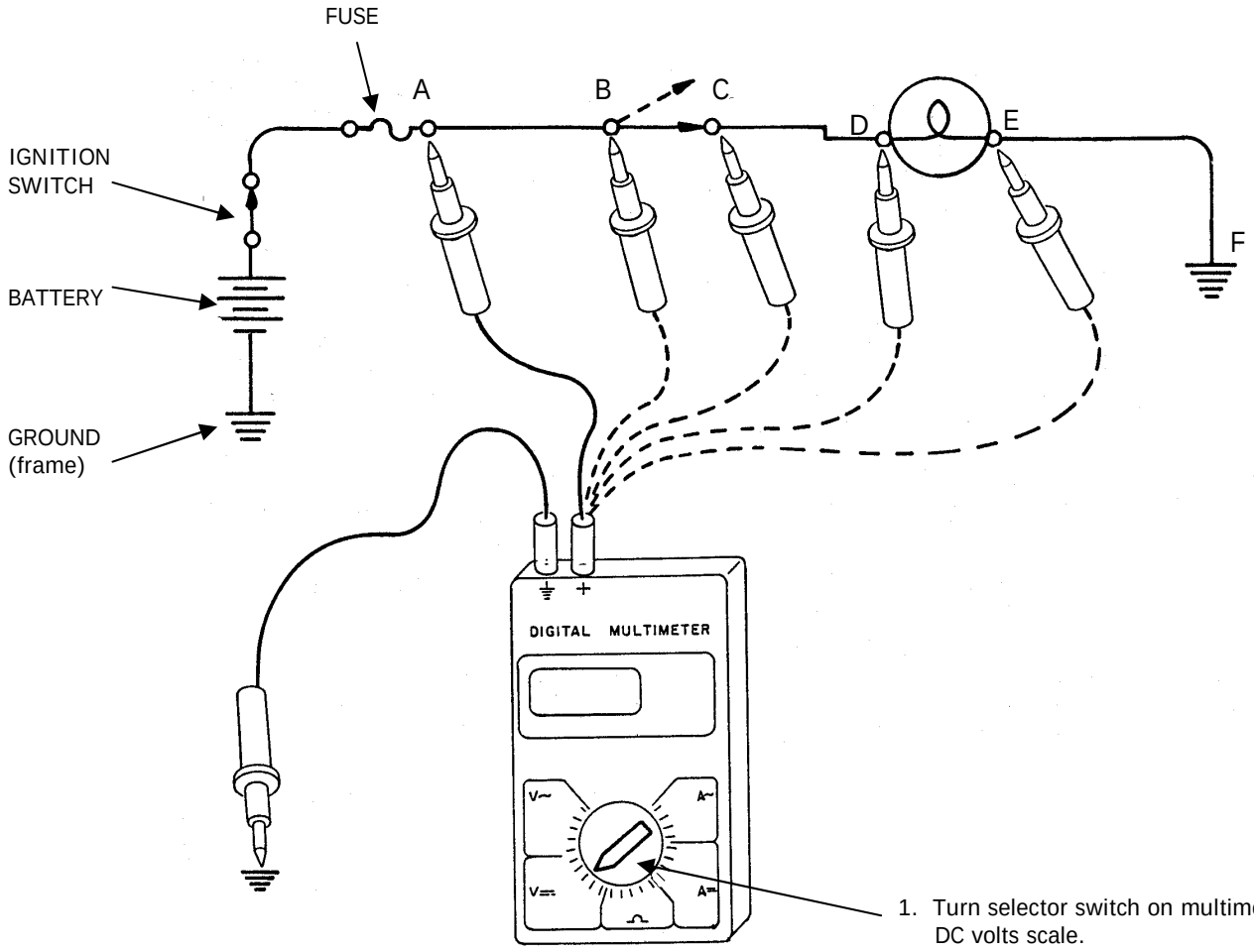
Unlike a series circuit, an open in a parallel circuit does not disable the entire circuit.



The branch to be tested must be isolated from the other branches. You can do this by disconnecting the other branches at the fuse terminal as shown at the left.

Once you have isolated the branch circuits from each other you may then proceed to test for continuity (open) using an ohmmeter as described on the previous page for series circuits.

TEST FOR OPEN (USING A VOLTMETER)



3. Connect positive meter probe to point A to determine if there is voltage available from the source. If no voltage is indicated, an open is present between ground and point A. Some possibilities could be a blown fuse, batteries not connected or dead, ignition switch open, broken connection or wires etc. If voltage is present, then proceed as follows.

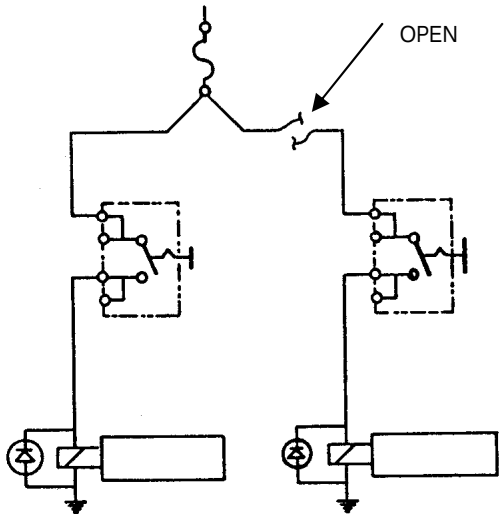
4. Leave negative meter probe connected to ground, and move positive probe to point B. If the meter shows voltage here, it indicates that the conductor from point A to B is complete. If not, check connections at each end, and the wire for a break. See page on continuity check.

5. If the above check indicated voltage at point B, move meter probe to point C. If there is no voltage at this point this might be caused by faulty contacts or the wire may have been connected to the wrong contact on the switch. Determine normal position of switch contacts. (Normally open or closed) and perform continuity check.

6. Follow on through to points D and E. If voltage is available at point E and the circuit component or lamp in this case is still inoperative then the problem lies in open circuit between point E and F (ground). Check connections at each end, and the wire for a break (see continuity test). If point F is inaccessible, it may be necessary to run an alternate line from point E to a suitable grounding point.

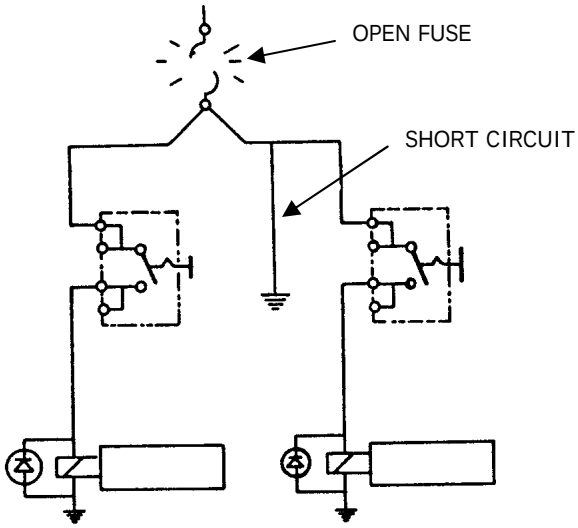
LOCATING A SHORT IN PARALLEL CIRCUITS

An open in a branch of a parallel circuit disables only that branch of the circuit.



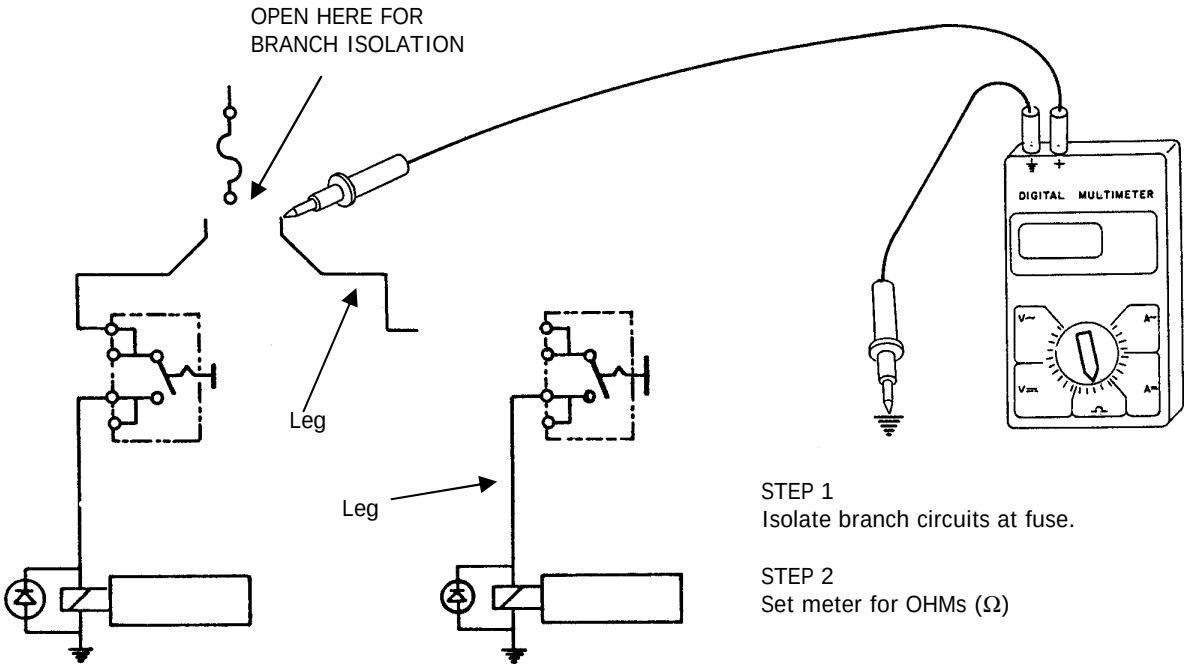
ONE BRANCH DISABLED

A short across a branch of a parallel circuit disables the entire circuit.



ALL BRANCHES DISABLED

A short circuit has almost no resistance since it by-passes circuit resistance. This permits the flow of an extremely large amount of current. When this current exceeds the fuse current rating the fuse blows (opens) and disables the entire circuit. With all branch circuits disabled, each branch must be examined separately to locate the short.



STEP 1
Isolate branch circuits at fuse.

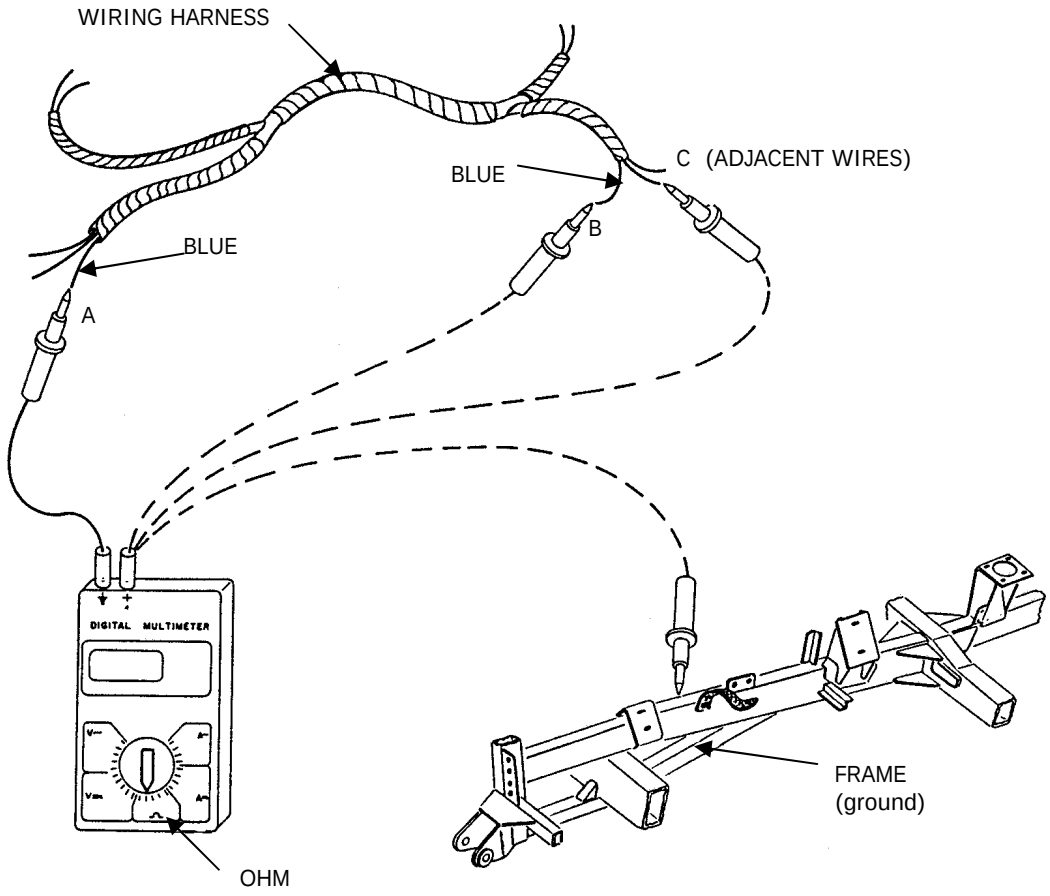
STEP 2
Set meter for OHMs (Ω)

STEP 3 Connect one meter probe to ground (frame).

STEP 4 Connect other probe to one end of circuit leg.
4.1 A high resistance indicates no short.
4.2 A very low resistance, usually zero OHMs indicates a short in that leg of the circuit.

STEP 5 Repeat step 4 for each leg of the circuit, and each branch as necessary to locate short.

WIRING HARNESS TEST FOR DEFECTIVE WIRE



A wiring harness is the main branch with leads which feed the electric circuits. Wires enter a common sheath joining other wires and emerge at other points in the circuit.

Individual wires in a harness may be replaced by cutting off the defective wire at each end of the harness. Discard the removed ends of the wire.

Run new wire along the existing harness and attach with plastic clips and electrical tape.

Do not attempt to thread the wire through the harness, as this may cause damage to other wires.

CAUTION! When replacing a defective wire, always use the same gauge wire. A smaller wire will not carry the required current and overheat will result.

	RESULTS IF WIRE IS DEFECTIVE
1. Test for open (broken wire)	A to B, A to C, A to D — Infinite resistance
2. Test for short (bare wire touching frame) check for blown fuse	A to D - Zero resistance A to C - Infinite resistance A to B - Zero resistance if wire is still intact but grounded A to B - Infinite resistance if wire is broken and grounded
3. Test for short (two bare wires) in contact	A to C - Zero resistance A to B - Zero resistance A to D - Infinite resistance

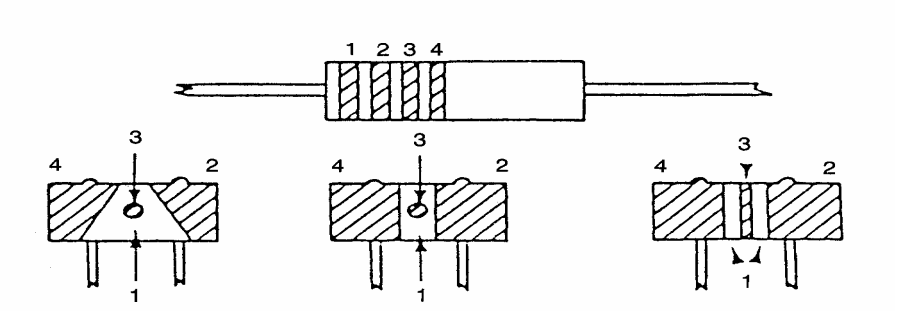
BLOWN FUSES

A blown fuse does not necessarily mean you have a short circuit.

Some other possible causes for a blown fuse are:

1. A temporary circuit overload caused by a malfunctioning component.
2. Use of incorrect size fuse.
3. Poor contacts in the electrical circuit or component.

RESISTOR COLOR CODING



1. First significant digit
2. Second significant digit
3. Multiplier value
4. Tolerance

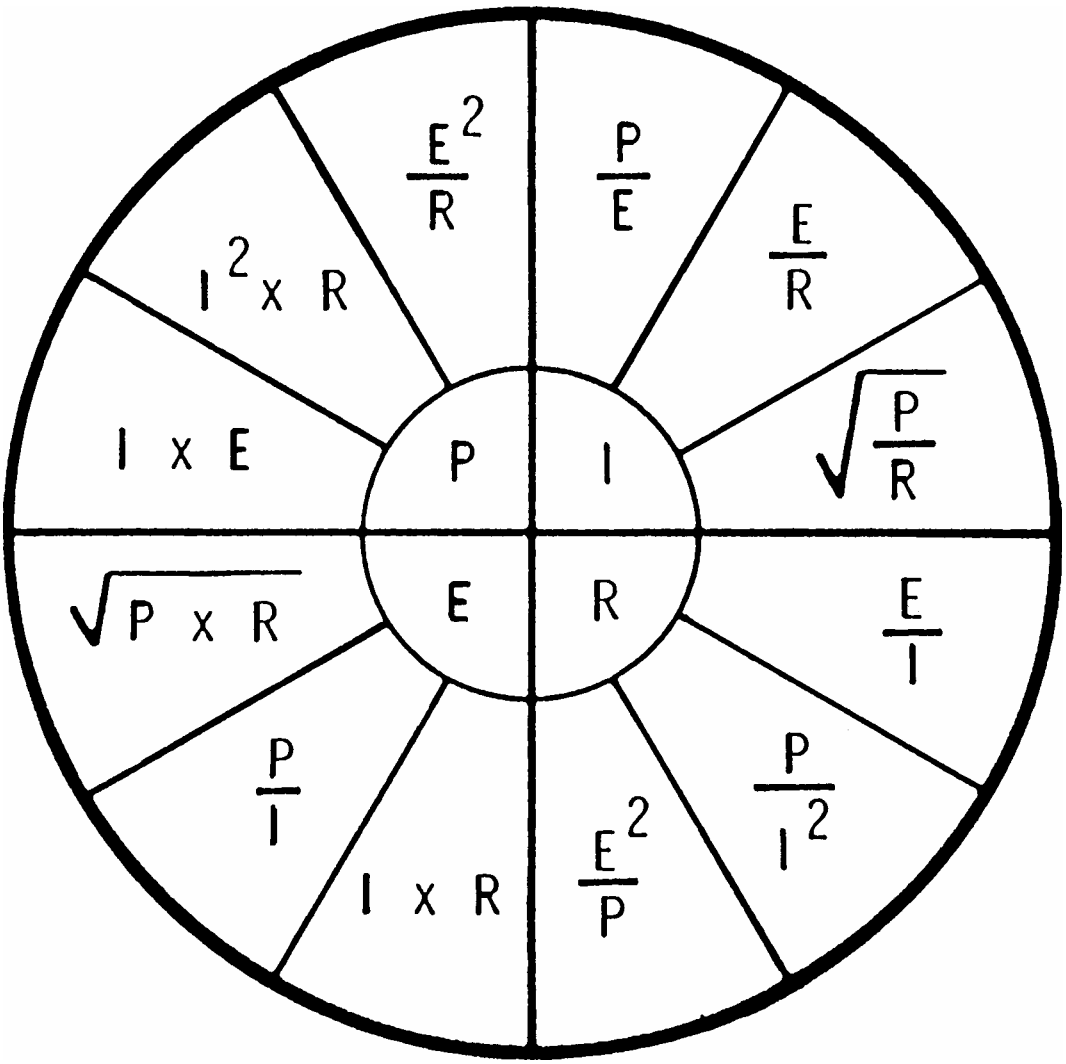
RETMA color code for resistors

COLOR	1 FIRST SIGNIFICANT DIGIT	2 SECOND SIGNIFICANT DIGIT	3 MULTIPLIER	4 PERCENT TOLERANCE
Silver			0.01	10
Gold			0.1	5
Black		0	1.0	
Brown	1	1	10	1
Red	2	2	100	2
Orange	3	3	1,000	3
Yellow	4	4	10,000	4
Green	5	5	100,000	
Blue	6	6	1,000,000	
Purple	7	7	10,000,000	
Gray	8	8	100,000,000	
White	9	9	1,000,000,000	
No color				20

EXAMPLES

NOMINAL VALUE	PERCENT TOLERANCE	BAND				TOLERANCE	RANGE
		1	2	3	4		
22,000 Ω	=20	Red	Red	Orange	No band	=4,400 Ω	17,600-26,400 Ω
100 Ω	=5	Brown	Black	Brown	Gold	=5 Ω	95-105 Ω
10 Ω	=10	Brown	Black	Black	Silver	=1 Ω	9-11 Ω
1.2 k Ω	=5	Brown	Red	Red	Gold	=60 Ω	1140-1260 Ω
6.8 M Ω	=20	Blue	Gray	Green	No band	=1.36 M Ω	5.44-8.16 Ω

Wheel diagram for selecting the proper equation for CURRENT, VOLTAGE, RESISTANCE, and POWER



SYMBOL	QUANTITY	UNIT OF MEASUREMENT
E	Voltage	Volts
I	Current	Amps
R	Resistance	Ohms
P	Power	Watts

American Wire Gauge (AWG) sizes may be determined by measuring the diameter of the conductor (the bare wire) with the insulation removed.

Awg. Size	Metric Wire Size	Stranding/ Wire Dia. per Strand		Approximate Overall Diameter	
	mm^2	in	mm	in	mm
-	0.5	1/.032	1/.813	0.032	0.81
20	-	7/.0121	7/.307	0.036	0.91
-	0.75	1/.039	1/.991	0.039	0.99
18	-	1/.0403	1/1.02	0.04	1.02
18	-	7/.0152	7/.386	0.046	1.16
-	1	1/.045	1/1.14	0.045	1.14
-	1	7/.017	7/.432	0.051	1.3
16	-	1/.0508	1/1.29	0.051	1.29
16	-	7/.0192	7/.488	0.058	1.46
-	1.5	1/.055	1/1.40	0.055	1.4
-	1.5	7/.021	7/5.33	0.063	1.6
14	-	1/.0641	1/1.63	0.064	1.63
14	-	7/.0242	7/.615	0.073	1.84
-	2.5	1/.071	1/1.80	0.071	1.8
-	2.5	7/.027	7/.686	0.081	2.06
12	-	1/.0808	1/2.05	0.081	2.05
12	-	7/.0305	7/.775	0.092	2.32
-	4	1/.089	1/2.26	0.089	2.26
-	4	7/.034	7/.864	0.102	2.59
10	-	1/.1019	1/2.59	0.102	2.59
10	-	7/.0385	7/.978	0.116	2.93
-	6	1/.109	1/2.77	0.109	2.77
-	6	7/.042	7/1.07	0.126	3.21
9	-	1/.1144	1/2.91	0.1144	2.91
9	-	7/.0432	7/1.10	0.13	3.3
8	-	1/.1285	1/3.26	0.128	3.26
8	-	7/.0486	7/1.23	0.146	3.7
-	10	1/.141	1/3.58	0.141	3.58
-	10	7/.054	7/1.37	0.162	4.12
7	-	1/.1443	1/3.67	0.144	3.67
7	-	7/.0545	7/1.38	0.164	4.15
6	-	1/.162	1/4.11	0.162	4.11
6	-	7/.0612	7/1.55	0.184	4.66
-	16	7/.068	7/1.73	0.204	5.18
5	-	7/.0688	7/1.75	0.206	5.24
4	-	7/.0772	7/1.96	0.232	5.88
-	25	7/.085	7/2.16	0.255	6.48
-	25	19/.052	19/1.32	0.26	6.6
3	-	7/.0867	7/2.20	0.26	6.61
2	-	7/.0974	7/2.47	0.292	7.42
-	35	7/.100	7/2.54	0.3	7.62
-	35	19/.061	19/1.55	0.305	7.75
1	-	19/.0664	19/1.69	0.332	9.43
-	50	19/.073	19/1.85	0.365	9.27
1/0	-	19/.0745	19/1.89	0.373	9.46
2/0	-	19/.0837	19/2.13	0.419	10.6
-	70	19/.086	19/2.18	0.43	10.9
3/0	-	19/.094	19/2.39	0.47	11.9
3/0	-	37/.0673	37/1.71	0.471	12
-	95	19/.101	19/2.57	0.505	12.8
-	95	37/.072	37/1.83	0.504	12.8
4/0	-	19/.1055	19/2.68	0.528	13.4

Alarm Rocker Switch	9,11
Alternator	8,21
Alternator Charge Light	8,22
Antenna	23
Auto-Lift Reverse Rocker	17,18
Back Up Alarm Relay	9
Batteries	8
Battery Main Switch	8
Beacon Lights	28
Beacon Rocker Switch	28
Blade Float Rocker	15,16
Brake Pressure Sender	22
Buttons, T-Handle	15
Cab Heater	34
Cab Latch Switch	17,18
Cam Position Sensor	40
Center/Float Rocker	17,18
Circuit Testing Procedures	43
Clock	29
Complete Electrical PB EDGE	42
Controllers (Moog)	10,11
Coolant Temp Gauge	21
Coolant Temp Sender	21,39,40
Directional Light Relay	30
Directional Light Stalk	30
Directional Lights	30
Door Switches	22
Drive Card	9,10,11,13,14
Drive Control (Card to Cab)	9
Drive Control (Card to Chassis)	10
Driver's Seat	23
Engine Fan (electric shift)	39
Engine Grid Heater	37
Engine Speed Transmitter	40
Flywheel Pick-up	40
Foot Throttle Transmitter	40
Forward/Reverse Switch	9
Front Ball Valve	15
Front Fog/Xenon Light Rocker	26
Front Fog/Xenon Lights	26
Front Implement Electrical System	15,16
Front Top Lights	25
Front Windshield Heating	31
Front Wipers and Horn	35
Fuel Gauge	21
Fuel Tank Sender	21
Function Chart, (Front)	15,16
Function Chart, (Rear)	17,18
Fuse 1	7,25
Fuse 2	7,25
Fuse 3	7,25
Fuse 4	7,25
Fuse 5	7,21,25,29
Fuse 6	7,11,25
Fuse 7	7,25
Fuse 8	7,27
Fuse 9	7,9,11
Fuse 10	7,9,11,13,14
Fuse 11	7,13,14
Fuse 12	7,16,17,18,36
Fuse 13	7,23,35
Fuse 14	7,21,22
Fuse 15	7,27
Fuse 16	7,17,18
Fuse 17	7
Fuse 18	7,30,35,37
Fuse 19	7,34
Fuse 20	7,40
Fuse 21	7,40
Fuse 22	7,40
Fuse 23	7,23
Fuse 24	7,40
Fuse 25	7,40
Fuse 26	7,8,40
Fuse 27	7,21,31,32,33
Fuse 28	7,32
Fuse 29	7,31
Fuse 30	7,28,29
Gauges and Senders	21
Grid Heater	37
Hand Spotlight	27
Headlights (Upper)	25
Heater Blower	34
Horns	35
Hour Meter	21
Hydraulic Level/Temp Sender	22
Ignition Switch Starting - Charging Circuit	8
Implement Control Card	15,16,17,18
Interior Dome Light	29
Joystick Control	16,18
Junction Box, (Rear)	17,18
Lighting Rocker (Main)	25
Load Limit Bypass Switch	9,11
Load Limit Card	9,10,11,13,14

Main Fuse Box	8
Mirror Heat Rocker	33
Mirror Heating	33
Oil Pressure Sender	40
Outside Temp Gauge	21
Parking Lights	25
Pigtail Connectors	15,16,17,18
Plug, Front 7 Pin	13,14
Plug, Front 8 Pin	15,16
Plug, Rear 13 Pin	17,18
Proximity Switches	17,18
Radio and Driver's Seat	23
Rear Glass	32
Rear Glass Heat Rocker	32
Rear Implement Electrical System	17,18
Rear Light Rocker	27
Rear Steering Buttons	18
Rear Steering Toggle	17
Rear Top Lights	27
Rear Window Heating	32
Rear Wiper	36
Relay - Fuse Index	7
Relay K1	7,30
Relay K2	7,35
Relay K3	7,31,32,33
Relay K4	7,25
Relay K5	7,25
Relay K6	7,27
Relay K7	7
Relay K8	7,32
Relay K9	7,35
Relay K10	7
Relay K11	7
Relay K12	7
Relay K13	7
Relay K14	7,12
Relay K15	7,16
Relay K16	7,16
Relay K17	7,16
Relay K22	7,36
Resistor Color Coding	48
Seat Belt Tension Lock	24
Servo (Moog)	10,11
Side Window Heating	33
Side Window Heating Rocker	33
Starter Relay	8,40
Starter Motor	8,40
Steering Potentiometer	9
Stereo	23
Tachometer	21
Third Pump Control	13,14
Tiller Card (Drive Card)	13,14
Tiller Pump Controller	13,14
Tiller Depth Adjustment Circuit	19
Tiller Depth Gauge	19,21
Tiller Depth Potentiometer	19,21
Tiller Depth Rocker	17,18
Tiller Forward/Reverse Rocker	13,14
Tiller On/Off Rocker	13,14
Tiller Speed Potentiometer	13,14
Track Speed Potentiometer	9,11
Track Tension	20
Trail 2-Speed Drive Motors	12
Under Console Light	29
Up/Down Pressure Rocker	17,18
Up-Pressure Potentiometer	17,18
Voltage Converter (24v-12v)	23
Voltage Regulator (electronics)	9,11
Warning Light Cluster	22
Warning Lights and Buzzer	22
Wheel Diagram For Electrical Equations	49
Windshield	31
Windshield Heat Rocker	31
Wiper Motor (Front)	35
Wiper Motor (Rear)	36

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